HANDBOUND
AT THE
UNIVERSITY OF
TORONTO PRESS

THE ANNALS

OF THE

AMERICAN ACADEMY

OF

POLITICAL AND SOCIAL SCIENCE

ISSUED BI-MONTHLY

VOL. XXXI

JANUARY—JUNE, 1908

EDITOR: EMORY R. JOHNSON
ASSOCIATE EDITORS: L. S. ROWE, SAMUEL McCUNE LINDSAY
CARL KELSEY, JAMES T. YOUNG, CHESTER
LLOYD JONES, WARD W. PIERSON

101443
17/5/10.

PHILADELPHIA
AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE
1908

Copyright, 1908, by the American Academy of Political and Social Science.
All rights reserved.

H
1
A4
v.31

CONTENTS

PRINCIPAL PAPERS

PAGE

Abbot, Henry L. Present Status of the Panama Project 12
Althouse, Calvin O. Water Power in the Mississippi Valley. 164
Bergen, Frank. Restrictive Legislation Against Public Service Corporations in New Jersey 659
Bruère, Henry. Public Utilities Regulation in New York.... 535
Cleveland, F. A. Neglected Aspects of Currency and Banking 420
Cortelyou, George B. Introductory Note 301
Davis, Arthur P. Reclamation of Arid West by Federal Government 203
Dodd, W. F. The Finances of the District of Columbia 671
Earle, George H., Jr. A Central Bank as a Menace to Liberty 355
Elliott, J. M. A National Clearing House as a Safeguard Against Panics 460
Fairlie, John A. The New York Canals 117
Forbes, Urquhart A. The Inland Waterways of Great Britain and the Plans under Consideration for their Improvement. 228
Foreman, Milton J. Chicago New Charter Movement—Its Relation to Municipal Ownership 639
Flagler, C. A. F. Engineering Features of Chesapeake and Delaware, and Norfolk-Beaufort Waterways 73
Frame, Andrew J. Diagnosis of the World's Elastic Currency Problems 377
Frissell, A. S. Trust Companies and Reserves 463
Gage, Lyman J. The Obstacles to Currency Reform 454
Herrick, Myron T. The Panic of 1907 and some of its Lessons 308
Hotchkiss, Willard E. Recent Phases of Chicago's Transportation Problem 619
Jones, Chester Lloyd. The Anthracite-Tidewater Canals... 102

PAGE

Jones, Lawrence M. The Improvement of the Missouri River and its Usefulness as a Traffic Route 178
Lewis, Edwin O. Philadelphia's Relation to Rapid Transit Company 600
Lotz, Walther. The Present Significance of German Inland Waterways 246
Luetscher, G. D. Atlantic Coastwise Canals: Their History and Present Status 92
MacAfee, John Blair. Result of Further Legislative Regulation of Electric Railways 695
Mills, A. L. The Northwest in the Recent Financial Crisis.. 413
Moore, J. Hampton. The Delaware River 67
Murphy, John J. Franchise Grants in New York City 612
Nash, William A. Clearing-House Certificates and the Need for a Central Bank 361
Newlands, Francis G. The Use and Development of American Waterways 48
Parsons, William Barclay. Cape Cod Canal 81
Pinchot, Gifford. The Relation of Forests to Stream Control 219
Pollock, Horatio M. The Public Service Commissions of the State of New York 649
Ransdell, Joseph E. Legislative Program Congress Should Adopt for Improvement of American Waterways 36
Richards, J. L. The Boston Consolidated Gas Company: Its Relation to the Public, Its Employees, and Investors 593
Ridgely, William Barret. An Elastic Credit Currency as a Preventive of Panics 326
Roberts, George E. The Need of a Central Bank 345
Roosevelt, President. Our National Inland Waterways Policy. (Memphis Address)........................ ... 1
Schiff, Jacob H. Relation of a Central Bank to the Elasticity of the Currency 372
Seligman, Isaac N. Foreign Experience a Guide to Currency Reform 367
Sikes, George C. The Relation of Chicago to Public Service Corporations 689
Thayer, Walter. Transportation on the Great Lakes 126
Treat, Charles H. The Readjustment of our Banking System and the Unification of the Currency 335

PAGE
Vance, John L. The Improvement of the Ohio River 139
Vanderlip, Frank A. The Panic as a World Phenomenon ... 302
Way, R. B. Mississippi Improvements and Traffic Prospects. 146
Wexler, S. The Lessons of the Panic of 1907 448
Wilcox, Delos F. The Control of Public Service Corporations in Detroit 576
Wolff, Solomon. Public Service Corporations of New Orleans 630
Wright, Henry C. Development of Transit Control in New York City 552
Yates, Henry W. Panic Preventions and Cures 398
Young, Frederick G. Columbia River Improvement and the Pacific Northwest 189

COMMUNICATIONS

Bancroft, William A. Moderation in Control of Public Service Corporations 701
Robinson, Louis N. The German Städtetag 703

NOTES ON MUNICIPAL GOVERNMENT

Conducted by L. S. Rowe and W. W. Pierson.

The Relation of the Municipality to the Water Supply. A Symposium ... 470
Amsterdam (Holland), Berlin (Germany), Copenhagen (Denmark), Stockholm (Sweden), Upsala (Sweden), Madrid (Spain)

DEPARTMENT OF SOCIAL WORK

Conducted by Carl Kelsey.

Infant Mortality in the American Cities. Compiled by G. B. Mangold. A Symposium 484
New York City, Philadelphia, St. Louis, Baltimore, Buffalo, Cincinnati, Milwaukee, Minneapolis, Providence, Rochester.
The New York Society for the Prevention of Cruelty to Children. By E. F. Jenkins 492

BOOK DEPARTMENT

CONDUCTED BY CHESTER LLOYD JONES

REVIEWS

PAGE
Baldwin, J. M. Social and Ethical Interpretations in Mental Development.—*M. V. O'Shea* 513
Barker, E. The Political Thought of Plato and Aristotle.—*C. L. Jones* 287
Beer, G. L. British Colonial Policy. 1754-1765.—*E. R. Johnson* 514
Berglund, A. The United States Steel Corporation.—*W. S. Tower* 515
Cambridge Modern History. Vol. X.—*W. E. Lingelbach* 288
Casson, H. V. The Romance of Steel.—*W. S. Tower* 290
Clark, J. B. Essentials of Economics.—*F. D. Watson* 515
Commons, J. R. Races and Immigrants in America.—*G. B. Mangold* ... 516
Cromer, The Earl of. Modern Egypt. Two Vols.—C. L. Jones...... 725
Curtis, Natalie (Ed). The Indians' Book.—C. L. Jones........ 727
Day, C. A History of Commerce.—*E. R. Johnson* 517
Defebaugh, J. E. (Ed.). History of the Lumber Industry of America. Two Vols.—*G. G. Huebner* 727
Dowd, J. The Negro Races. Vol. I.—*C. Kelsey* 518
Doyle, J. A. English Colonies in America. Vols. IV and V.—*H. V. Ames* 291
Durland, K. The Red Reign.—*C. Kelsey* 519
Eaton, J. Grant, Lincoln and the Freedmen.—*W. L. Fleming*. 520
Edwards, A. M. The Labor Legislation of Connecticut.—*J. L. Barnard* 521
Enock, C. R. The Andes and the Amazon.—*H. R. Ringe* 728
Fessenden, F. Life and Public Services of William Pitt Fessenden. Two Vols.—*W. L. Fleming* 521
Fisk, G. M. International and Commercial Policies.—*F. D. Watson* 522
Hadley, A. Standards of Public Morality.—*M. H. Robinson* 523
Hawley, F. B. Enterprise and the Productive Process.—*R. V. Phelan*.... 729
Howe, F. C. The British City.—*L. S. Rowe* 729
Hunt, W., and Poole, R. L. (Editors). The Political History of England. Vol. V. By H. A. L. Fisher.—*E. P. Cheyney* 523
Ingram, J. K. A History of Political Economy.—*S. Nearing* 730
Latané, J. H. America as a World Power.—*C. L. Jones*........ 525
Lindsay, T. M. A History of the Reformation. Two Volumes.—*W. E. Lingelbach* 526
McBain, H. L. DeWitt Clinton and the Origin of the Spoils System in New York.—*W. T. Root* 293
Meyer, H. R. The British State Telegraphs.—*S. E. Sparling* 731
Meyer, H. R. Public Ownership and the Telephone in Great Britain.—*E. W. Bemis* 527
More, Louise B. Wage-Earners' Budgets.—*C. L. Raper* 528

PAGES
Municipal and Private Operation of Public Utilities. Three volumes.—*C. L. Jones* 731
Murray, A. M. Imperial Outposts.—*C. L. Jones* 529
Ortuzar, A. Chile of To-day.—*L. S. Rowe* 530
Osgood, H. L. The American Colonies in the Seventeenth Century.—*D. Y. Thomas* 294
Ross, E. A. Sin and Society.—*H. R. Mussey* 295
Schuster, E. J. The Principles of German Civil Law.—*C. L. Jones* 295
Shaw, A. Political Problems of American Development.—*L. S. Rowe* .. 531
Small, A. W. Adam Smith and Modern Sociology.—*H. R. Mussey* 296
Smith, S. G. The Industrial Conflict.—*M. O. Lorenz* 297
Speed, T. The Union Cause in Kentucky, 1860-1865.—*H. V. Ames* 298
Sumner, W. G. Folkways.—*C. Kelsey* 531
Trevelyan, G. O. The American Revolution. Part III.—*C. R. Fish* 532

NOTES

Aimes, H. H. S. A History of Slavery in Cuba 495
Allin, C. D. The Early Federation Movement in Australia 707
Andresen, N. P. The Republic 495
Atlanta University Publications. No. 11 707
Aucuy, M. Les Systèmes Socialistes d'Échange 263
Barnard, J. L. Factory Legislation in Pennsylvania 263
Bartlett, D. W. The Better City 495
Barton, J. L. The Missionary and His Critics. Second Edition 495
Bazaine, M. La Intervencion Francesa en Mexico 496
Beazley, C. R. The Dawn of Modern Geography. Vol. III 496
Berens, L. H. The Digger Movement in the Days of the Commonwealth. 264
Bogart, E. L. Economic History of the United States 497
Bond, B., Jr. The Monroe Mission to France, 1794-1796 264
Boyd, C. E. Cases on Constitutional Law. Second Edition 265
Brewster, W. N. The Evolution of New China 265
Brisco, N. A. The Economic Policy of Robert Walpole 266
Brown, S. Alpine Flora of the Canadian Rocky Mountains 497
Browne, H. A. Bonaparte in Egypt and the Egyptians of To-day 498
Bullock, C. J. Finances and Financial Policy of Massachusetts from 1780 to 1905 267
Bullock, C. J. Selected Readings in Economics 498
Bunn, C. O. and W. C. Constitution and Enabling Act of the State of Oklahoma 708
Butler, N. M. True and False Democracy 499
Bureau of American Ethnology. Twenty-fourth and Twenty-fifth Annual Reports, 1902-04 268
Calvert, A. F., and Gallichan, W. M. Cordova 268
Calvert, T. H. Regulation of Commerce under the Federal Constitution 499

PAGES
Campbell, R. J. Christianity and the Social Order 499
Chatterton-Hill, G. Heredity and Selection in Sociology 269
Commons, J. R. Proportional Representation 270
Craig, N. B. Recollections of an Ill-Fated Expedition 500
Davis, R. H. The Congo and the Coasts of Africa 500
Dawson, W. J. A Prophet in Babylon 708
Densmore, E. Sex Equality 501
Dick, S. The Heart of Spain 501
Dow, E. W. Atlas of European History 270
Dunmore, W. T. Ship Subsidies 708
Das Land der Zukunft 271
Fisher, I. The Rate of Interest 501
Forbes-Lindsay, C. H. The Philippines 271
Forrest, J. D. The Development of Western Civilization 271
Foulke, W. D. Translated by. History of the Langobards, by Paul the Deacon ... 272
Fraser, J. F. Red Russia 709
Freeman, W. G., and Chandler, S. E. The World's Commercial Products 709
Fynn, A. J. The American Indian as a Product of Environment 710
Gomme, G. L. The Governance of London 711
Griffis, W. E. Corea the Hermit Nation 273
Griffis, W. E. The Japanese Nation in Evolution 273
Griffith, E. C. The Rise and Development of the Gerrymander 502
Guthrie, W. B. Socialism before the French Revolution............. 711
Hale, A. The South Americans 503
Hall, B. Three Acres and Liberty 274
Hart, G. Woman and the Race 274
Hattersley, C. W. Uganda by Pen and Camera 712
Hazen, A. Clean Water and How to Get It 275
Henderson, C. R. Outdoor Labor for Convicts 713
Higginson, T. W. Life and Times of Stephen Higginson 504
Holland, C. Old and New Japan 713
Holman, F. V. Dr. John McLoughlin, the Father of Oregon 275
Holt, H. On the Civic Relations 276
Hone, N. J. The Manor and the Manorial Records 276
Hoyt, J. C., and Grover, N. C. River Discharge 713
Hueffer, F. M. England and the English 277
Hulbert, A. B. The Ohio River 504
Hull, W. H. (Editor.) Practical Problems in Banking and Currency.. 713
Hutchinson, A. L. The Limit of Wealth 278
Jacquart, C. Statistique et Science Sociale 505
Jordan, D. S. The Human Harvest 278
Kelly, E. The Elimination of the Tramp 714
Kemmerer, E. W. Money and Credit Instruments in their Relation to Prices ... 714
Kenny, C. S. Outlines of Criminal Law 505
Kirkup, T. An Inquiry into Socialism 279

PAGE
Knight, E. F. Oversea Britain 505
K[illegible] D. American [illegible] 719
Kropotkin, Prince. The Conquest of Bread 715
Labriola, A. Socialism and Philosophy 279
La Fargue, P. The Right to be Lazy 280
LaMonte, R. R. Socialism: Positive and Negative 280
[illegible] 281
Macrosty, H. W. The Trust Movement in British Industry 281
Mahan, A. T. From Sail to Steam 716
Marx, K. Revolution and Counter-Revolution 280
Merritt, A. N. Federal Regulation of Railway Rates 716
Miyakawa, M. The Life of Japan 281
Morris, C. Home Life in All Lands 506
Munro, D. C. and Sellery, G. C. (Editors). Medieval Civilization 506
National Association of Railway Commissioners, Proceedings of the Eighteenth Annual Convention of 717
Neame, L. E. The Asiatic Danger in the Colonies 282
Osborn, E. [illegible] Breaking Down Chinese Walls 717
Parloa, M. Home Economics 282
P[illegible], R. The Great [illegible] 718
[illegible], R. F. [illegible] 506
Poorman, C. L. The Conflict of the Ages 283
Popplewell, F. Iron and Steel Production in America 719
Powell, L. P. Christian Science: the Faith and its Founder 719
Pratt, E. A. Organization of Agriculture 507
Reeves, J. S. American Diplomacy under Tyler and Polk 719
Richards, R. C. Railroad Accidents 283
Rollins, M. Money and Investments 507
Root, E. The Citizen's Part in Government 507
R[illegible], A. [illegible] 508
Salmond, J. W. Jurisprudence. Second Edition 508
Sargent, A. J. Anglo-Chinese Commerce and Diplomacy 720
Scott, J. G. Burma 720
Scott, J. T. The Sexual Instinct. Second Edition 508
Shufeldt, R. W. The Negro: A Menace to American Civilization 509
Smith, A. H. China and America To-day 721
Snedden, D. S. Administration and Educational Work of American Juvenile Reform Schools 509
Snyder, C. American Railways as Investments 510
Snyder, C. The World Machine 284
Sociological Papers. Vol. III 285
Spargo, J. Capitalist and Laborer 280
Steiner, B. C. Maryland during the English Civil Wars. Part II 285
Steiner, E. A. The Mediator 510
Stelzle, C. Christianity's Storm Center 510
Stevens, A. C. (Editor.) The Cyclopedia of Fraternities 722

PAGE
Stimson, F. J. The American Constitution 722
Tenney, A. A. Social Democracy and Population 511
Terlinden, C. Guillaume Ier Roi des Pays-Bas et L'Eglise Catholique en Belgique. Two volumes 286
Terrill, Bertha M. Household Management 723
Thayer, J. S. Legal Essays 723
de Tourville, H. The Growth of Modern Nations 723
Tyler, L. G. Narratives of Early Virginia, 1606-1625 724
Voorhees, E. B. Forage Crops 724
Washington, B. T. The Negro in Business 724
Webster, H. Primitive Secret Societies 724
Welsford, J. W. The Strength of Nations 511
Who's Who in America 725
Widney, J. P. Race Life of the Aryan Peoples. Two volumes 287
Winter, N. O. Mexico and Her People of To-day 512
Wood, W. A. Modern Business Corporations 512

Annual Report of the American Academy of Political and Social Science for 1907 733

SUPPLEMENT

Child Labor Legislation. Handbook, 1908. Compiled by Josephine C. Goldmark. May, 1908. Pp. 68.

INTRODUCTION.

This sixth annual issue of the Handbook reveals more clearly than its predecessors the utter lack of adequate protection for working children in the United States. The black list of states and territories recurring in the schedules both shows what remains to be done there, and also indicates that the United States of America, as a nation, fails in its duty to its most defenceless workers.

The Federal Government.—The enlightened nations of Europe enact one law for the whole nation, leaving to the local authorities only the duty of enforcement. The Congress of the United States enacts protective measures, for instance, for the benefit of the cotton and glass industries, but leaves to the legislatures the protection of the children in those industries, with the result that some thousands of little boys, in many states, labor all night in glass works, while both little girls and little boys may perfectly legally work all night in cotton mills in several southern states.

The federal government does not even afford up-to-date information concerning the children. The census table given on p. 68 is now eight years old. The publication of this Handbook, year after year, by a volunteer organization, is a standing reproach. Far more appropriately might the Handbook have appeared for twenty years past, as a January bulletin of the Department of Labor or of the Department of Education, or of both in co-operation. The annual report of the Department of Education for 1906, issued April, 1908, is, so far as it deals with compulsory education and child labor laws, obsolete and misleading, a hindrance, not a help, to intelligent action. We need full, consecutive, trustworthy current information concerning the children of our nation. This can be obtained only through a bureau devoted to them which should issue promptly the data gathered by the census and the departments of education and labor, not, as now occurs, years after the figures have lost their chief value and have become ancient history.

A bill still pending before Congress provides for the working children in the District of Columbia. It is given in full in order that every reader of the Handbook may urge upon his or her senator and representative the necessity of voting for it, that the nation's capital may be removed from the black list and may become an example to the rest of the country. See p. 66.

A far more important bill now pending before Congress is the Beveridge child labor bill (see p. 65) which proposes to exclude from interstate commerce products of all mines and factories which employ children under the age of fourteen years. This bill marks an epoch in the history of federal legislation. For the first time, the principle is embodied in a proposed law that children in Georgia, Florida or Alabama have the same right to childhood as children in Oregon or Illinois, that the nation accepts the task of safeguarding its future citizens against overwork in childhood, as it already protects consumers against the transportation of poisons and adulterations in their foodstuffs.

Child Illiteracy.—The present confusion of state laws inflicts cruel neglect upon children in states having least legislation. In 1900, 13 states had 510,678 illiterate children between the ages of 10 and 14 years, compared with 69,269 such children in the remaining 39 states. The states having this large share of illiterate children were Missouri, Indian Territory, Kentucky, Arkansas, Virginia, Texas, Tennessee, Mississippi, North Carolina, South Carolina, Louisiana, Georgia, Alabama. (See p. 68 Census Table).

In view of the approaching census of 1910 it is, therefore, of especial interest to note the present laws of these states eight years after the facts were recorded in the Census of 1900. Indian Territory has been merged in Oklahoma, Kentucky and Missouri have adopted measures which reasonably approach the Standard Child Labor Law. As to the remaining states the following items are suggestive:

Alabama—(66,072 illiterate children 10 to 14 years of age in 1900) permits work at the twelfth birthday, no compulsory education law, no documentary proof of age, accepts affidavit of parent or guardian and sets no daily limit within the period of 13 working hours, 6 a. m. to 7 p. m.

Georgia—(63,329 illiterate children 10 to 14 years of age in 1900) allows orphans and children of widows or disabled fathers to be employed in cotton mills at 10 years, other children at 12 years, no documentary proof of age, accepts affidavit of parent or guardian, no compulsory education law. No officials for inspection.

Louisiana—(55,691 illiterate children 10 to 14 years of age in 1900). Boys may work at 12, girls at 14 years, no documentary proof of age, no educational requirement, no closing hour, no compulsory education law.

South Carolina—(51,536 illiterate children 10 to 14 years of age in 1900). No age limit for orphans and children of widows or disabled fathers, no age limit in June, July and August for children who have attended school 4 months in the year and can read and write. All children may work in cotton mills at 12 years, no documentary proof of age, accepts affidavit of parent or guardian. Only children under 12 years are forbidden to work between 8 p. m. and 6 a. m. No compulsory education law, no special officials for inspection.

North Carolina—(51,190 illiterate children 10 to 14 years of age in 1900). Children may work at 13 years in cotton mills, no documentary evidence of age, accepts affidavit of parent or guardian, no educational requirement, no compulsory education law, sets no daily limit of hours within period of 15 working hours, 5 a. m. to 8 p. m. Children under 18 years may be employed 66 hours in the week.

Mississippi—(44,334 illiterate children 10 to 14 years of age in 1900). Children may work at 12 years of age, no documentary proof of age, accepts affidavit of parent or guardian, no compulsory education law.

Tennessee—(36,375 illiterate children 10 to 14 years of age in 1900). No documentary proof of age, affidavit of parent or guardian accepted, no educational requirement, no compulsory education law, no closing hour, children may work 62 hours in one week (61 hours after January 1, 1909, 60 hours after January 1, 1910), no daily limit of hours.

Texas—(35,491 illiterate children 10 to 14 years of age in 1900). Children who can read and write may work at 12 years, no proof of age, no compulsory education law. Children under 14 years of age may be exempted on grounds of poverty from educational requirement of reading and writing. No daily limit of hours within the period of 12 working hours 6 a. m. to 6 p. m.

Virginia—(34,612 illiterate children 10 to 14 years of age in 1900). Children may work at 12 years until March 1, 1909, thereafter at 13 until March 1, 1910, thereafter at 14 years, orphans and children of invalid parents continuing to work at 12 years. No proof of age, no educational requirement, no compulsory education law, no closing hour, after fourteenth birthday for any child, and no daily limit of hours for boys over 14.

Arkansas—(26,972 illiterate children 10 to 14 years of age in 1900). Allows orphans and children of widowed mothers or disabled fathers to work at 12 years, allows children of any age to work without any restriction at canneries for the preservation of fruits or vegetables, no compulsory education law, no officials for inspection of factories or other places where children are employed.

How Laws are Weakened.—Attention is called to certain principles which should be avoided in framing new laws and amending old ones.

Attendance at an evening school by working children under the age of sixteen years should never be prescribed or tolerated. Unfortunately, the night school requirement is now in force in seven states.

The early escape from school leaves large numbers of children free to work too young. Thus Alaska and ten states have no compulsory school attendance law. In Maryland compulsory attendance ends at the twelfth birthday in Baltimore and Alleghany County, and there is none elsewhere in the state; in Rhode Island it ends at the thirteenth birthday, and in fifteen states at the fourteenth. Nineteen states prescribe compulsory attendance to the age of 16 years.

In states where there are no officials for inspection there is no enforcement.

No state maintains a sufficient staff of officials for the protection of its children. Inspectors insufficient in number cannot enforce the law, however faithful and competent they may be. Money for salaries, traveling and legal expenses is needed. Small appropriations (in some cases none whatever) indicate hostility to enforcement.

The method of issuing working papers may contribute largely to weaken laws. Certain states place the issuance of "working papers" in the hands of the factory inspectors. It is, however, the duty of inspectors to inspect, and to prosecute violations of the law. Everything which calls them away from the continuous performance of these duties is an injury to the service. The appropriate officials for issuing "working papers" are the local boards of health, in co-operation with the local boards of education. Notaries public and factory inspectors should be, in all cases, debarred from issuing "working papers," and factory inspectors should be kept strictly to the tasks of inspection and prosecution. Faithfulness and skill on the part of officials who issue working-papers are as important as the same qualities in inspectors and truant officers.

Exemptions and Omissions.—Certain industries have hitherto obtained exemptions for which there is no tenable basis. Thus, in Pennsylvania the glass industry has retained the privilege of employing boys of 14 years all night, while other employers are restricted to nine o'clock. The messenger service is very commonly omitted from child labor laws and the District of Columbia and 21 states have no age limit for messenger boys.

In Arkansas, Delaware, Iowa, Maine, Maryland, Wisconsin, canneries are exempted from the provisions of the law. This is particularly injurious for the children, because the busy season in this industry falls in the months of excessive heat, rendering work particularly exhausting. California exempts all agricultural, horticultural, viticultural or domestic labor during the time the public schools are not in session or during other than school hours. This makes it possible to require children to do an unlimited day's work in addition to going to school, irrespective of their age.

In every state in which domestic labor is exempted, a premium is placed upon work at home, and the sweating system is fostered.

Many child labor laws are seriously weakened by exemptions of classes of children who most need protection. Such are orphans, children of widowed mothers or disabled fathers, and those exempted by reason of poverty. This last term is so elastic as to amount, in many cases, to complete nullification of the intent of the statute.

Adult Delinquency Law.—Colorado strengthens its child labor and compulsory education laws by means of its adult delinquency law. This affords such valuable protection to telegraph and messenger boys and many other classes of young workers that it is given in full on p. 62 in the hope that all the states may adopt it as Illinois, Nebraska, Wisconsin and other states have already done.

Recent Gains.—The greatest gain in recent years is the rapidly lengthening list of states, Colorado, Illinois, Nebraska, New York, Ohio, Wisconsin (applying to cigar factories) having the 8 hours day for children under 16 years, in connection with the spreading movement for early closing.

No law affords real protection against nightwork—the greatest menace to the children—unless it fixes a definite end of the working day. This is also the only way to enforce laws restricting hours of labor by the day and by the week. Without a closing hour, all such restrictions are shams.

At the time this goes to press, the District of Columbia bill has passed the Senate with some amendments and is likely to be enacted into law. Full information as to the final outcome of the bill may be obtained by writing to the National Consumers' League, 105 East 22d St., New York, or to Dr. J. H. Harris, Secretary of the District of Columbia Child Labor Committee, 1736 G St., Washington, D. C.

SCHEDULE A—AGE LIMIT

The Age Below Which Child Labor is Prohibited varies from sixteen to ten years. The number of employments prohibited also varies greatly—from all employment during school hours to mine work only. Obviously the states which prohibit child labor in several occupations have more effective legislation than those which prohibit it in only one or two, even though the age limit be the same.

Eleven states prohibit work to the sixteenth birthday in either mines or specific occupations injurious to health, or both. These are, for mines, New York, Oklahoma, Pennsylvania (inside anthracite mines) Texas; for specific occupations, Kentucky, Minnesota, Missouri, Ohio, Wisconsin; for both, Illinois and Montana. Montana includes any mine, mill, smelter, factory, steam, electric, hydraulic or compressed air railroad, elevator, or place where any machinery is operated, any telegraph and telephone office or messenger, or any occupation not enumerated above, known to be dangerous or unhealthful.

Kentucky, Minnesota, Missouri, Ohio and Wisconsin have adopted the list of dangerous employments prohibited by Illinois in 1903. In addition, Ohio prohibits employment to 16 years in dipping, dyeing or packing matches, manufacture or packing explosives, and for girls, manufacture or packing tobacco. Wisconsin prohibits all employment to 16 years in any tobacco warehouse, cigar or other factory where tobacco is manufactured or prepared.

South Dakota prohibits employment to the fifteenth birthday in factory, mine, hotel, laundry, elevator, bowling alley, theatre.

Thirteen states prohibit employment under 14 years of age in stores, factories and one or more of the following places of employment: offices, laundries, hotels, theatres, bowling alleys, bakeries. Six states prohibit employment in stores and factories, while 11 states limit their prohibition to factories only. Eighteen states prohibit employment of children in mines to 14 years.

For the first time, the states which do not set an age limit for the telegraph and telephone service are separately listed. Sixteen states prohibit employment in the messenger service under 14 years, with certain exceptions in vacation; one state (Maryland) under 12 years. Washington prohibits employment of girls under 19 in the messenger service, Wisconsin to 18 years.

The District of Columbia and 21 states set no age limit for messengers.

New Hampshire and Vermont are the only remaining northern states which keep the 12 year age limit in factories (in vacation). The importance of this lies in the fact that these states have cotton mills employing children, and in practice such employment is never perfectly limited to vacation.

Georgia alone, among all the states, retains 10 years as the age limit for orphans or children of widowed mothers or disabled fathers.

South Carolina, alone, sets no age limit whatsoever for orphans or children of widowed mothers or disabled fathers.

Arkansas, California, Delaware, Iowa, Louisiana, Maine, Maryland and Wisconsin have laws protecting certain classes of children, but permit exemptions of an unusually wholesale character—leaving the children unprotected in canneries, an industry in which the hours of labor inevitably tend to become irregular and exhaustingly long. This list is longer than last year by the addition of Arkansas and Maine. Kentucky, on the contrary, in its new statute has abolished the exemption which was formerly made in favor of the tobacco industry. Every exemption is an injury to the children who are permitted to work and to the effectiveness of the law. It is also fundamentally unjust.

The District of Columbia, Nevada and 2 territories have no age limit.

The prominence of the District of Columbia as containing the capital of the nation, and the fact that many children are employed there as messengers and in the street trades, make it particularly desirable that the District should speedily be removed from the list of states which have no age limit.

Group I.—Age Limit for Employment, 16 Years

Illinois—In mines, in specified dangerous operations, in preparing compositions involving use of dangerous acids, or in manufacture of paints, colors or white lead.

Kentucky—Same as Illinois, excepting mines.

Massachusetts—18 years, in manufacture of acids (upon complaint and after investigation by State Board of Health.)

Minnesota—Same as Kentucky.

Montana—In any mine, mill, smelter, factory, steam, electric, hydraulic or compressed air railroad, elevator, or place where any machinery is operated, any telegraph and telephone office or as messenger, or any occupation not enumerated above, known to be dangerous or unhealthful.

Missouri—Same as Kentucky.

New York—In mines and quarries.

Ohio—Same as Kentucky and in addition job or cylinder printing presses operated by power other than foot; dipping, dyeing or packing matches; manufacturing, packing or storing powder, dynamite, nitroglycerine, compounds, fuzes or other explosives. For girls under 16, assorting, manufacturing or packing tobacco.

Oklahoma—In mines.

Pennsylvania—*Inside* anthracite mines.

Texas—In mines or distilleries.

Wisconsin—Same as Kentucky, and in addition, any tobacco warehouse, cigar or other factory where tobacco is manufactured or prepared, machines used in picking wool, cotton, hair or any upholstering material, paperlacing machinery, leather burnishing machinery.

Group II.—Age Limit for Employment, 15 Years

South Dakota—In any factory, mine, hotel, laundry, elevator, bowling alley, theatre or in any place where liquors are sold, or as a messenger thereof.

Group III.—Age Limit for Employment, 14 Years

1. In factories, stores, or in any of the following: offices, laundries, hotels, theatres, bowling alleys.	California (except children over 12. For exemptions see p. 38. Applies also to apartment houses and restaurants. Idaho (except children over 12 years in vacation. Applies also to apartment houses. Does not apply to theatres or bowling alleys) Illinois Iowa (applies also to slaughter or packing-houses; not to hotels, theatres, bowling alleys) Indiana (applies also to bakeries and renovating works; not to hotels, theatres, bowling alleys) Kentucky (applies also to restaurants and apartment houses) Michigan Missouri (applies only to cities of more than 10,000 inhabitants) Nebraska New York (applies also to apartment houses) Ohio (applies also to all "establishments") Pennsylvania (applies to all places except those needing domestic, coal mining, or farm labor) Wisconsin (except children over twelve in vacation; for exemptions see p. 39)

2. In factories or stores.

- Connecticut
- Massachusetts
- North Dakota (during school hours)
- Oregon (except in vacation; for exemptions see p. 39)
- Rhode Island
- Washington (for exemptions see p. 39)

3. In factories.

- Arkansas (except orphans or children of widows or disabled fathers)
- Colorado (for exemptions see p. 38)
- Delaware (except children of widows, employment in canneries or manufacture of fruit or berry baskets)
- Kansas (applies also to packing houses)
- Louisiana (applying to girls in a city of more than 10,000 inhabitants)
- Maine
- Minnesota
- New Jersey
- Tennessee
- Texas (if illiterate)
- Wisconsin (includes bowling alleys)

4. In messenger service.

- California (excepting children over 12 in vacation)
- Idaho (excepting children over 12 in vacation)
- Illinois
- Kentucky
- Maryland (12 years)
- Michigan
- Missouri (applies only to cities of more than 10,000 inhabitants)
- Nebraska
- New York
- Ohio
- Oregon (excepting children over 12 in vacation)
- Pennsylvania
- Vermont (12 years in vacation; 15 years during school hours)
- Washington (19 years for girls; boys between 14 and 19 years must have permit from judge of juvenile court)
- Wisconsin (18 years for girls; boys 12 years in vacation)

5. In mines.

- Arkansas (to 16 years if illiterate)
- Colorado (includes smelters; coal mines to 16 if illiterate)
- Idaho (except children over 12 in vacation)
- Indiana (includes quarries)
- Iowa
- Kansas
- Kentucky
- Minnesota
- Missouri (to 16 years if illiterate)
- North Dakota(during school hours)
- Ohio (15 years in school term, 14 years in vacation)
- Oregon
- Pennsylvania (*outside* anthracite mines)
- Tennessee
- Utah (includes smelters)
- Washington (12 years *outside* mines)
- Wisconsin
- Wyoming

Group III. (Continued)—Age Limit for Employment, 14 Years

6. In all employment during school hours.

- Arizona
- California (to 16 unless literate or certificate of attendance at night school is presented)
- Colorado (unless signed certificate of school attendance is presented)
- Connecticut
- District of Columbia
- Idaho (to 16, if illiterate)
- Illinois
- Kentucky
- Massachusetts
- Minnesota (to 16 unless employment certificate is presented)
- Missouri (unless age certificate is presented)
- Montana (unless age and schooling certificate is presented; 16 years if illiterate)
- Nebraska
- New Hampshire (to 16 if illiterate)
- New York
- North Dakota (except when employed by parent or guardian or unless certificate of 12 weeks' school attendance is presented)
- Ohio (16 years, unless age and schooling certificate is presented)
- Oregon
- South Dakota (to 15 years)
- Vermont (to 16 years unless certificate of 9 years' schooling is presented)
- Washington (to 15 years unless certificate from school superintendent is presented stating that eighth grade has been completed or stating other sufficient reason)
- West Virginia
- Wisconsin

Group IV. Age Limit for Employment, 13 Years

North Carolina (except apprentices)

Group V. Age Limit for Employment, 12 Years

1. In stores or factories.

- California (in vacation or if parent is disabled)
- Maryland (applies also to offices, hotels, apartment houses, restaurants or other establishments or business, except in 19 counties from June 1 to October 15)
- West Virginia (in vacation)

2. In factories.

- Alabama
- Arkansas (applies to orphans or children of disabled fathers or widowed mothers)
- Florida (applies also to bowling alleys)
- Georgia (except orphans or children of disabled fathers or widowed mothers)
- Louisiana (applying to boys in cities of more than 10,000 inhabitants)
- Mississippi
- New Hampshire (out of school hours)
- North Dakota (14 years during school hours)
- South Carolina (except orphans and children of widows or disabled fathers. For exemptions see p.40)
- Texas (if able to read and write)
- Vermont (out of school hours and in vacation. In school term, 16 years unless certificate of 9 years' school attendance is presented to employer. Applies also to quarries, railroads and messenger service)
- Virginia (13 years after March 1, 1909; 14 years after March 1, 1910, in stores, factories and mines.).

3. In mines.

- Alabama
- Florida (includes quarries)
- Maryland (14 years if illiterate)
- North Carolina
- North Dakota (14 years during school hours)
- Pennsylvania (bituminous mines)
- South Carolina
- Virginia
- West Virginia (in vacation)

Group VI.—Age for Employment, 10 Years

1. In factories. Georgia (orphans or children of widowed mothers or disabled fathers)

Group VII.—Some Specific Exemptions

Arkansas—Preservation of fruits or vegetables during vacation.
California—All agricultural, horticultural or viticultural work or domestic labor in vacation or out of school hours.
Delaware—All canneries, manufacture of fruit and berry baskets and applying to all children of widows.
Florida—Household or agricultural work.
Louisiana—Domestic or agricultural laborers or industries.
Maine—Manufacture of materials or products which are perishable and require immediate labor to prevent decay or damage. Provided that inspector shall on complaint investigate sanitary conditions, hours of labor and other conditions detrimental to children, and if in his judgment such exist, he may, in conjunction with municipal officers, prohibit employment of children until conditions are removed.
Maryland—Farm labor, and all employment in the counties, between June 1 and October 15.
Pennsylvania—All domestic and farm labor.
Rhode Island—All agricultural pursuits or household service.
South Carolina—Applying in June, July and August to all children who have attended school four months in the year and can read and write.
Wisconsin—Farming or other out-door occupation not dangerous to life or limb.

Group VIII.—No Age Limit for Messengers

Alabama
Alaska
Arkansas
Delaware
District of Columbia
Florida
Georgia
Hawaii
Indiana
Kansas
Louisiana
Maine
Mississippi
Nevada
New Jersey
New Mexico
North Carolina
Oklahoma
Rhode Island
South Carolina
Tennessee
Texas
Utah
Virginia
Wyoming

Group IX.—No Age Limit Whatsoever

District of Columbia (except during school hours)
Hawaii
Nevada
New Mexico
South Carolina (applying to orphans and children of widowed mothers or disabled fathers)

SCHEDULE B—HOURS OF LABOR

The Most Significant Schedule in this year's Handbook is the new one showing states which prohibit more than 8 hours employment in one day.

The new Ohio law is the most enlightened and humane, since it includes girls to the 18th birthday.

For purposes of enforcement the New York law is particularly good. The period during which work is permitted, 8 a. m. to 5 p. m., is but nine hours, and the time prescribed for the noonday meal is sixty minutes. Violations are therefore obviously easier to detect than in states in which the working period falls within wider limits.

Six states limit employment to 9 hours in one day and 54 in one week:—California, Delaware, Florida, Idaho, Missouri, and New York (applying to children under 16 in stores and as messengers).

Twenty-four states restrict work to 10 hours in one day and either 55, 58 or 60 hours in one week.

Five states, Alabama, Georgia, North Carolina, Pennsylvania and Tennessee allow more than 10 hours work in one day, viz:

Alabama permits 60 hours in one week, but sets no daily limit of hours in the 13-hour period between 6 a. m. and 7 p. m. for all minors under 18 in factories.

North Carolina permits 66 hours in one week, and sets no daily limit of hours in the 15-hour period between 5 a. m. and 8 p. m., for all minors under 14 in factories.

Pennsylvania permits 12 hours in 24 (10 hours between December 5 and 25) and 60 in one week for women and minors under 16 in all gainful occupations.

Tennessee permits 62 hours in one week (61 hours after January 1, 1909, 60 hours after January 1, 1910) and sets no other limit of hours whatsoever by day or by night.

Those states which fail to restrict the hours of labor allowed in one *week* as well as in one *day* invite the possibility of seven days' labor. In Washington, for example, women and girls may not only work ten hours at night, they may do this every night, including Sunday.

Work at Night is Effectively Restricted to the 16th Birthday in 18 States. Twelve states set an early closing hour for children under 16 years, New York fixing 5 p. m.; Michigan, Ohio, Oregon and Wisconsin 6 p.m., and Alabama, Idaho, Illinois, Kentucky, Minnesota, Missouri and New Jersey (in stores) fixing 7 p. m. Of these, the Ohio law is the most comprehensive, since it includes girls to the 18th birthday.

Two states, Indiana and Pennsylvania, prohibit employment of girls at night under 16 years. Pennsylvania specifically authorizes employment of boys over 14 years in order to prevent waste or destruction of material in process of manufacture, while Indiana has no prohibition of nightwork for boys.

Children have no positive immunity from night work unless the hours are explicity stated between which it is unlawful to employ them. Obedience to laws forbidding night work is assured only when a legal closing hour is set. This is especially true in the messenger service, the glass industry, retail stores and textile trades which employ children generally at night, unless specifically prohibited after a definite hour.

The District of Columbia, 4 territories and 20 states fail to prohibit work at night after a definite closing hour.

The sinister feature of this list is the presence of Connecticut, Delaware, Indiana, Louisiana, Maine, Maryland, New Hampshire, Tennessee and West Virginia, all of them important manufacturing states having industries in which children are employed.

Arkansas, California, Delaware, Iowa, Louisiana, Maine and Wisconsin exempt large numbers of children from any restriction of hours in canneries and fruit-preserving establishments.

The District of Columbia, 3 territories and 6 states,—Kansas, Nevada, Oklahoma, Washington (applying to boys), West Virginia and Wyoming,—have no time limit whatsoever.

Group I.—Work at Night Prohibited

A—MINORS OVER 16 YEARS

From 6 P. M.–7 A. M.	Ohio	Girls under 18 years in all gainful occupations (boys under 16 years).
6 P. M.–6 A. M.	Massachusetts	Minors under 18 years in textile mills (and all women).
7 P. M.–7 A. M.	New Jersey	Minors under 18 in bakeries
9 P. M.–5 A. M.	Pennsylvania	Minors under 18 in bakeries
9 P. M.–6 A. M.	New York	Girls under 21 in factories.
10 P. M.–7 A. M.	New York	Girls under 21 in stores.
10 P. M.–6 A. M.	Massachusetts	Minors under 18 years in all other manufacture (and all women).
	Indiana	Girls in factories (and all women).
	Nebraska	Girls over 16 years in factories, stores, hotels, and restaurants (and all women).

B—CHILDREN UNDER 16 YEARS

5 P. M.–8 A. M.	New York	In factories.
6 P. M.–7 A. M.	Ohio	Boys in all gainful occupations.
	Oregon	In all gainful occupations.
	Wisconsin	In all gainful occupations except newsboys who may work between 4 and 6 a. m. and 4 and 8 p. m., and children between 14 and 16 in stores who may work to 9 p. m.
	Michigan	In factories.

B—CHILDREN UNDER 16 YEARS (CONTINUED)

7 P. M.–7 A. M.	Illinois	In all gainful occupations.
	Kentucky	In all gainful occupations.
	Minnesota	In all gainful occupations (to 10 p. m. on Saturdays and for 10 days before Christmas).
	Missouri	In all gainful occupations. Applies only to cities of more than 10,000 inhabitants.
	New York	In mercantile establishments in New York City and Buffalo.
	New Jersey	In mercantile establishments except one day in the week to 9 p. m., and between Dec. 15 to 25 to 10 p. m.
7 P. M.–6 A. M.	Alabama	In factories (children between 16 and 18 may be employed 8 hours between said hours).
	Mississippi	In factories
8 P. M.–6 A. M.	Nebraska	In factories, stores, offices, hotels, laundries, theatres, packing houses, beet fields or as messengers.
	Rhode Island	In factories or stores except in stores on Saturdays and for 4 days before Christmas.
8 P. M.–5 A. M.	Washington	In bakeries.
After 8 P. M.	Vermont	In factories, mines, quarries, railroads or as messengers.
9 P. M.–7 A. M.	Wisconsin	In stores
9 P. M.–6 A. M.	Iowa	In factories, stores, mines, laundries or packing houses.
	Pennsylvania	In all gainful occupations (except boys over 14 in certain industries who may work not more than 9 hours at night).
	Idaho	In all gainful occupations
9 P. M.–5 A. M.	Missouri	In bakeries.
10 P. M.–7 A. M.	New York	In mercantile establishments except in New York City and Buffalo.
10 P. M.–6 A. M.	California	In factories, stores, offices and laundries.

C—CHILDREN UNDER 14 YEARS

6 P. M.–7 A. M.	Virginia	In factories and mines.
6 P. M.–6 A. M.	Texas	In factories.
7 P. M.–6 A. M.	Massachusetts	In all gainful occupations.
	Arkansas	In factories.
	Georgia	In factories.
8 P. M.–5 A. M.	North Carolina	In factories.
After 8 P. M.	Massachusetts	In street trades.
After 10 P. M.	New York	Newsboys in cities of 1st and 2d class.

D—CHILDREN UNDER 12 YEARS

8 P. M.–6 A. M.	South Carolina	In factories.
9 P. M.–6 A. M.	Florida	In all gainful occupations.

Group II.—No Closing Hour At Night

Alaska
Arizona
Colorado
Connecticut
Delaware
District of Columbia
Hawaii
Indiana (applying to boys)
Kansas
Louisiana
Maine
Maryland
Montana
Nevada
New Hampshire
New Jersey (except in stores)
New Mexico
North Dakota
Oklahoma
South Dakota
Tennessee
Utah
Washington (except bakeries)
West Virginia
Wyoming

Group III.—The 8-Hour Day

8 in 24	48 in one week	Ohio	Girls under 18, boys under 16, in all gainful occupations.
8 in 24	48 in one week	Illinois	Children under 16 in all gainful occupations.
8 in 24	48 in one week	Nebraska	Children under 16 in all gainful occupations.
8 in 24	48 in one week	New York	Children under 16 in all factories.
8 in 24	48 in one week	Wisconsin	Minors under 18 in cigar manufacture
8 in 24		Colorado	All children under 16 years in stores, factories or any occupations injurious to health in the discretion of the county judge. (For exceptions see p. 39.)
8 in 24		Arizona Colorado Montana Missouri Nevada Oklahoma Oregon Utah Wyoming	All persons in mines.

Group IV.—The 9-Hour Day

9 in 24	54 in one week	California	All children under 18 years in factories and stores or other place of labor. (See p. 40.)
9 in 24	54 in one week	Delaware	Children under 16 in factories.
9 in 24	54 in one week	Florida	Children under 12 in all occupations.
9 in 24	54 in one week	Idaho	Children under 16 in all gainful occupations.
9 in 24	54 in one week	Missouri	Children under 16 in all gainful occupations. (In cities of more than 10,000 inhabitants.)
9 in 24	54 in one week	New York	Children under 16 in stores and as messengers.

Group V. The 10-Hour Day

10 in 24	55 in one week	New Jersey	Children under 16 in factories.
10 in 24	55 in one week	Wisconsin	Children under 16 in all gainful occupations (except to save perishable goods from damage).
10 in 24	58 in one week	Massachusetts	Minors under 18 in stores and factories (and all women. For exemptions see p. 40.)
10 in 24	58 in one week	Rhode Island	Children under 16 in factories (and all women. For exemptions see p. 40.)
9.40 in 24	58 in one week	New Hampshire	Minors under 18 in factories (and all women. For exemptions see p. 40.)
10 in 24	58 in one week	Connecticut	Children under 16 in stores and factories (and all women. For exemptions see p. 40.)
10 in 24	58 in one week	Mississippi	Children under 16 in factories.
10 in 24	60 in one week	New York	Minors 16 to 18 in factories (includes all women). Girls 16 to 21 in stores. (For exemptions see p. 39).
10 in 24	60 in one week	Louisiana	Minors under 18 in factories, dressmaking or millinery establishments. (Includes women.)
10 in 24	60 in one week	South Carolina	All operatives in cotton and woolen mills. (For exemptions see p. 40.)
10 in 24	60 in one week	Michigan	Minors under 18 in stores and factories (and all women. For exemptions see p. 40).
10 in 24	60 in one week	Indiana	Girls under 18, boys under 16 in stores, factories, laundries, renovating works, bakeries, printing offices. (For exemptions see p. 40.)
10 in 24	60 in one week	Maine	Girls under 18, boys under 16 in factories. (For exemptions see p. 40.)
10 in 24	60 in one week	Nebraska	Girls over 16 years in factories, stores, hotels or restaurants (and all women.)
10 in 24	60 in one week	Kentucky Minnesota Oregon	Children under 16 in all gainful occupations.
10 in 24	60 in one week	Iowa	Children under 16 in factories, stores, mines, laundries and packing houses.
10 in 24	60 in one week	Arkansas	Children under 14 in factories.
10 in 24		North Dakota South Dakota	Minors under 14 in factories.

10 in 24		Washington	Women and girls.
10 in 24	60 in one week	Maryland	Children under 16 in factories and in Baltimore stores.
10 in 24		Virginia	Children under 14 in factories.

Group VI.—Over 10 Hours in One Day

Hours.			
11 in 24	66 in one week	Georgia	All operatives in cotton and woolen mills.
	62 in one week	Tennessee	Women and minors under 16 years in factories. (After Jan. 1, 1909, not more than 61 hours; after Jan. 1, 1910, not more than 60 hours.)
	66 in one week	North Carolina	Minors under 18 in factories.
12 in 24	60 in one week	Pennsylvania	—Women and minors under 16 in all gainful occupations. (10 hours in one day, between Dec. 5 and 24 in mercantile establishments.)
13 in 24	60 in one week	Alabama	Children under 14 in factories.

Group VII.—Some Specific Exemptions

Arkansas—Preservation of fruits or vegetables during vacation.

California—All agricultural, horticultural or viticultural work or domestic labor in vacation or out of school hours.

Delaware—All canneries, manufacture of fruit and berry baskets and applying to all children of widows.

Florida—Household or agricultural work.

Iowa—Employment in husking sheds or other places connected with canning factories where vegetables or grain are prepared for canning and in which no machinery is operated.

Louisiana—Domestic or agricultural laborers or industries.

Maine—Manufacture of materials or products which are perishable and require immediate labor to prevent decay or damage. Provided that inspector shall on complaint investigate sanitary conditions, hours of labor and other conditions detrimental to children, and if in his judgment such exist, he may in conjunction with municipal officers prohibit employment of children until conditions are removed.

Pennsylvania—All domestic and farm labor. Boys over 14 years may work 9 hours at night where material in process of manufacture requires application of manual labor to prevent waste or destruction of said material.

Rhode Island—All agricultural pursuits.

South Carolina—Applying in June and July and August to all children who may have attended school 4 months in the year and can read and write.

Wisconsin—To save perishable goods from serious damage.

Group VIII.—No Time Limit Whatsoever

Alaska
District of Columbia
Hawaii
Kansas
Nevada
New Mexico
Oklahoma
Washington (applying to boys)
West Virginia
Wyoming

SCHEDULE C—COMPULSORY SCHOOL ATTENDANCE

In Respect to Compulsory Attendance Laws the points to be noted are:

1. The age to which attendance is required, which varies from sixteen to twelve years (in Maryland).
2. The length of the annual period of attendance, which varies from the whole school year to twelve weeks.
3. Officers and penalties for enforcement (see p. 54).

The District of Columbia and 40 states and territories require school attendance during some part of the school year.

Among the states having child labor laws, Rhode Island is the last state which permits children to leave school for work at 13 years, Maryland at 12 years.

The most effective means of preventing illegal employment of children is compulsory school attendance throughout the entire period during which employment is prohibited. Twenty-nine states now have this requirement. If the law prohibits children from working under a certain age, it should require them to be in school to that age, during the entire school term of each year, not a valueless period of a few weeks, but eight months at least. In states where children under the legal age of employment are not obliged to be in school all the year, complications in the enforcement of the child labor law invariably arise, because it is easy for parents to send their children to work under the legal age.

Alaska and 9 states have no compulsory education laws, viz., Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, Tennessee, Texas and Virginia.

Exemptions from the compulsory education laws are granted in many states for one or more of the following reasons:

Physical or mental disability.

Private instruction.

Distance from school (over two or three miles).

Poverty. In a few states free clothing or other aids are granted on account of poverty.

Group I. Attendance Compulsory to 16, if Unemployed

Arizona—If illiterate, 6 months, 20 weeks to be consecutive.
Colorado—Entire school year (exemptions granted to children over 14 if "necessarily employed," or if they have completed the eighth grade; illiterates under 16 must attend day or night school, whether employed or not).
Connecticut—Entire school year, 36 weeks.
Idaho—Entire school year. Exemptions granted to children over 14 if "necessarily employed" or if they have completed the eighth grade.
Illinois—Entire school year, not less than 110 days.
Maryland—Entire school year (applies only to Baltimore and Alleghany County).
Massachusetts—Entire school year, at least 160 days, if illiterate.
Michigan—Entire school year. Exemptions may be granted to children over 14 for poverty or if they have completed eighth grade.
Minnesota—Entire school year.
Missouri—Entire school year (applies to cities of 500,000 inhabitants or over).
Montana—Entire school year (illiterates under 16 must attend day school, whether employed or not).
Nebraska—Entire school year in city and metropolitan city school districts.
New Mexico—Twelve weeks.
New York—Entire school year between October and June.
Ohio—Entire school year.
Oklahoma—At least 3 months.
Oregon—Entire school year.

Pennsylvania—Entire school year (unless local school-board votes to accept 70 per cent of school year).
Wisconsin—Entire school year unless eighth grade of the public schools or equivalent has been completed.

Group II.—Attendance Compulsory to 15

Hawaii.
Kansas—Entire school year (children over 14 who can read and write English and are "necessarily employed," need attend school only 8 weeks annually).
Maine—Entire school year.
Nebraska—Two-thirds of entire school year, not less than 12 weeks, in other than city and metropolitan city school districts, unless employed.
Rhode Island—Entire school year (if unemployed).
Vermont—28 weeks at least.
Washington—Entire school year, unless first eight grades of public schools are completed.

Group III.—Attendance Compulsory to 14

Arizona—6 months, 20 weeks to be consecutive. (To 16, if illiterate.)
Arkansas—12 weeks, 6 to be consecutive.
California—Entire school year. (Exemptions granted by courts to children over 12 necessarily employed.)
Colorado—Entire school year. (To 16, unless employed.)
Connecticut—Entire school year. Attendance required to 16, if school committee decides child of 14 has not sufficient schooling to be employed.
Delaware—At least 5 months. Each school district may reduce session to not less than 3 months.
District of Columbia—Entire school year.
Idaho—Entire school year (to 16, unless employed.)
Illinois—Entire school year, at least 110 days (to 16, unless employed.)
Indiana—Entire school year.
Iowa—16 weeks.
Kentucky—Entire school year.
Massachusetts—Entire school year (to 16, unless employed.)
Michigan—Entire school year (to 16, unless employed.)
Minnesota—Entire school year (to 16, unless employed; exemptions may be granted to children "necessarily employed".)
Missouri—Not less than one-half of entire school year. In cities of over 500,000 inhabitants entire school year. To 16, unless employed or excused for poverty or graduated from common schools.
Montana—Entire school year, at least 16 weeks (to 16, unless employed.)
Nebraska—Entire school year in city districts, to 16 if unemployed; two-thirds of school year in other districts, to 15 if unemployed. Attendance at night school may be required.
Nevada—16 weeks, at least 8 to be consecutive.
New Hampshire—Entire school year (to 16, if illiterate.)
New Jersey—Entire school year.
New Mexico—12 weeks (to 16, unless employed.)
New York—Entire school year (between October and June. To 16, unless employed).
North Dakota—Entire school year (exemptions may be granted to children necessarily employed.)
Ohio—Entire school year, not less than 32 weeks. (To 16, unless employed.)
Oregon—Entire school year. (To 16, unless employed.)

Group III. (Continued)—Attendance Compulsory to 14

Pennsylvania—Entire school year, unless local school board votes to accept 70 per cent of year. (To 16, unless employed or if illiterate.)
South Dakota—Entire school year; district board may decrease required term to not less than 16 weeks, 12 of which must be consecutive.
Utah—20 weeks.
West Virginia—Entire school year, 20 weeks.
Wisconsin—Entire school year, 8 months (to 16, if not employed.)
Wyoming—First six months of session. (Exemptions granted for poverty.)

Group IV.—Attendance Compulsory to 13

Rhode Island—Entire school year (to 15, unless employed.)

Group V.—Attendance Compulsory to 12

Maryland—Entire school year (to 16, unless employed; applies only to city of Baltimore and Alleghany County.)
North Carolina—Law does not go into effect until voted by the county; does not apply to 11 counties; to 14 years if unemployed.
Virginia.

Group VI.—No Attendance Laws

Alabama
Alaska
Florida
Georgia
Louisiana
Mississippi
South Carolina
Tennessee
Texas

SCHEDULE D—EDUCATIONAL REQUIREMENT FOR EMPLOYMENT

An Educational Requirement before children can be legally employed is found in states having the best child-labor laws.

Such a requirement is a good reinforcement both of the age limit and compulsory attendance law, since it assures that ignorant, feeble-minded and subnormal children shall not work after mere perfunctory presence in school to the prescribed birthday. The educational requirement foils those parents who perjure themselves as to the age of the child, or offer other fraudulent evidence of age. This test applies to the child itself and is correspondingly beneficial. It consists either of the completion of a specified curriculum, ability to read and write (English not always specified), a certain amount of school attendance or all three.

Eight states, Colorado, Kentucky, Michigan, Minnesota, Nebraska, New York, Oregon and Vermont, require to a certain age, proof of the completion of a specified curriculum before employment. This requirement is particularly valuable in securing immunity from labor and the privilege of school attendance for illiterate immigrant children. In these states children of 14 years may not work, even though able to furnish proof of age, unless they have a fixed minimum of education, as proved by their signed school record.

Four other states, Idaho, Ohio, Montana and Washington, also require completion of a curriculum before employment, but fail to require definite signed proof of compliance with the requirement.

Sixteen states require school attendance for a specified length of time in the year before employment.

Nineteen states prohibit outright the employment of children who cannot read and write English.

Massachusetts requires children to read at sight and write intelligibly simple sentences in English, enough for admission to the fourth grade.

Arkansas, Connecticut, Georgia, Illinois and Wisconsin do not specify in what language children must be able to read and write. Michigan requires English only if children have been in the United States over three years.

Seven states (California, Colorado, Connecticut, Illinois, Maryland, Nebraska and New Hampshire) accept night-school in lieu of day-school attendance. For children under the age of sixteen years this is an injurious requirement, detrimental alike to health and education.

The District of Columbia, 4 territories and 16 states have no educational requirement for children seeking employment.

Group I.—Children May Not Be Employed Unless They Have Completed a Specified Curriculum

A. Requirement of School Record Signed by Authorities of School Attended by Child.

Colorado—Required between 14 and 16 years, written permit from superintendent of public schools, excusing child from school attendance if child has completed the eighth grade.

Kentucky—Required under 16 years, school record signed by principal or chief executive officer of school attended, certifying that child has received during required period of attendance, instruction in reading, spelling, writing, geography and is familiar with fundamental operations of arithmetic up to and including common fractions. Provided that if affidavit of applicant for employment certificate is filed, showing that diligent effort was made to obtain school record and that it cannot be obtained, person authorized to issue certificate may issue it without school record, but shall examine applicant as to his or her proficiency in each of the studies mentioned above.

Michigan—Required between 14 and 16 years, diploma of graduation from eighth grade of the public schools.

Minnesota—Required under 16 years, school record signed by principal of school attended, or if there is none, by teacher of child certifying that child has received instruction during required period of attendance in reading, spelling, writing, English grammar, geography and arithmetic up to and including fractions.

Nebraska—Required under 16 years, school record signed by teacher and principal of school attended, stating amount of work completed by child measured by grade of the public school (eighth grade required).

New York—Required under 16 years, school record signed by principal or chief executive officer of school attended, certifying that child has received during the required period of attendance, instruction in reading, spelling, writing, English grammar, geography and arithmetic up to and including fractions.

Oregon—Required under 16 years, school record signed by superintendent of schools or by a person authorized by him in writing, or where there is no superintendent of schools, by a person authorized by board of school directors; provided that no member of a board of school directors or other person authorized as aforesaid shall have authority to approve certificate for any child then in or about to enter his own employment, or employment of a firm or corporation of which he is a member, officer or employee. School record certifying that child has received instruction in subjects same as in New York (see above).

Vermont—Required under 16 years, certificate from town superintendent of schools, to be deposited with employer, to the effect that child has completed course of nine years.

Wisconsin—Required under 16 years, diploma of graduation from eighth grade of the public schools.

B. Requirement of "Satisfactory Proof" (Not Signed School Record).

Idaho—Required under 16 years, affidavit of parent or guardian certifying that child can read at sight and write legibly simple sentences in English, has received instruction in spelling, English grammar and geography and is familiar with fundamental operations of arithmetic up to and including fractions or has similar attainments in another language.

Montana—Required under 16 years, "satisfactory proof" given to person authorized to issue age and school certificate, that child has successfully completed required studies, viz., reading, spelling, writing, English grammar, geography, physiology and hygiene, and arithmetic.

Ohio—Required under 16 years, same as in Montana (see above).

Washington—Required under 15 years, for employment in school term, certificate made by or under direction of the board of school directors, stating that child has "attained a reasonable proficiency in the common school branches for the first 8 years as outlined in the course of study in the common schools in the State of Washington."

Group II. Children May Not Be Employed Unless They Have Attended School for a Specified Time Before Employment

Alabama—Required under 14 years, school attendance at least 8 weeks, in every year of employment, after January 1, 1909.

Arkansas—Required under 14 years, school attendance for 12 weeks of year preceding employment, six of which shall be consecutive; at the end of each year until child has passed public school age, certificate certifying attendance shall be furnished.

Delaware—Required under 16 years, certificate signed by teacher or teachers of such child, that child has attended, within 12 months immediately preceding such employment, some public day or night school, or some well-recognized school; such attendance having been 5 days or evenings every week during a period of at least 12 consecutive weeks, which may be divided into two terms of 6 consecutive weeks if arrangement of school term will permit.

Georgia—Required under 18 years, affidavit of parent or guardian, certifying that child has attended school 12 weeks of preceding year, 6 of which shall be consecutive; under 14 years, same school attendance required, 12 weeks to be consecutive.

Kentucky—Required under 16 years, statement in school record that child has regularly attended public schools or schools equivalent thereto or parochial schools for not less than 100 days during school year previous to his arriving at 14 years, or during year previous to his applying for such school record.

Minnesota—Required under 16 years, statement in school record that child has, in year previous to applying for school record, regularly attended public, parochial or private school as required by law.

Missouri—Required under 14 years, for employment in school hours, certificate from superintendent or teacher of school last attended, stating that child attended not less than one-half entire time school was in session.

Nebraska—Required under 16 years, statement in school record that child has regularly attended public schools, or schools equivalent thereto, or parochial schools, not less than three-fourths of school year previous to arriving at age of 14 years, or during year previous to applying for school record.

New York—Required under 16 years, statement in school record, that child has regularly attended public schools or schools equivalent thereto, or parochial schools, for not less than 130 days, during school year previous to his arriving at age of 14 years, or during year previous to his applying for such school record.

Group II. (Continued)—Children May Not Be Employed Unless They Have Attended School for a Specified Time Before Employment

North Carolina—Required under 13 years, written statement of parent that child has attended school 4 months in the preceding 12 months.

North Dakota—Required under 14 years, certificate from superintendent of schools or from clerk of school board stating that child has attended school for 12 weeks during the year as required.

Oregon—Required under 16 years, statement in school record, certifying that child has regularly attended public schools or school equivalent thereto, for not less than 160 days during school year previous to arriving at age of 14 years, or during year previous to applying for such record.

South Dakota—Required under 14 years, for employment during school term, certificate from superintendent of schools or clerk of school board stating that child has attended school for a period of 12 weeks during the year as required.

South Carolina—Children may be employed at any age in June, July and August, if they present certificates of 4 months' school attendance and ability to read and write.

Vermont—Required under 16 years, certificate signed by town superintendent of schools, stating that child has completed 9 years' course.

Washington—Required under 15 years (except in vacation), statement in school certificate that child has in the 12 months next preceding employment, attended school entire school year.

Group III.—Children May Not Be Employed Unless They Can Read and Write English

Arkansas—Required to 16 years for employment in mines, to 14 years for factories (English not specified).

Georgia—To 14 years (after January 1, 1908; English language not specified).

Idaho—To 16 years, for employment in school hours.

Indiana—To 16 years (unless blind, and except for employment in vacation).

Kentucky—To 16 years.

Michigan—To 16 years (English language not required, unless child has been three years in United States, before employment).

Massachusetts—To 16 years (except Saturdays in stores between 7 a. m. and 6 p. m. for minors between 14 and 16 years). Ability required sufficient to enter fourth grade.

Minnesota—To 16 years.

Missouri—To 16 years (for employment in mines).

Montana—To 16 years (for employment during school hours).

Nebraska—To 16 years.

New York—To 16 years.

Ohio—To 16 years.

Oregon—To 16 years.

Pennsylvania—To 16 years.

South Carolina—Children may be employed at any age (in June, July and August) if they present certificates showing school attendance for 4 months during the year, and ability to read and write.

Texas—To 16 years (exemptions granted to children between 12 and 14 years on account of poverty.

Washington—To 15 years.

Wisconsin—To 16 years (English not required).

Group IV.—Children Who Cannot Read and Write English May Not Be Employed Unless They Attend Day or Night School During Employment

California—Required to 16 years, for employment during school hours.
Colorado—To 16 years.
Connecticut—To 16 years (English language not specified).
Illinois—To 16 years (English language not specified). Illiterates under 16 may not be employed at all, in any town or city where there are no evening schools, or while evening schools are not in session.
Maryland—To 16 years.
Nebraska—To 16 years, unless eighth grade is completed.
New Hampshire—To 21 years.
New York—Boys between 14 and 16 employed in New York City and Buffalo must show certificate of graduation from elementary school or must attend night school 6 hours a week during 16 weeks.
Ohio—To 16 years.

Group V.—No Educational Requirement

Alaska
Arizona
District of Columbia
Florida
Hawaii
Iowa
Kansas
Louisiana
Maine
Mississippi
Nevada
New Jersey
New Mexico
Oklahoma
Rhode Island
South Carolina (except in vacation)
Tennessee
Utah
Virginia
West Virginia
Wyoming

SCHEDULE E—WORKING PAPERS; CERTIFICATES OF AGE AND SCHOOLING

No child labor law is enforceable unless it provides for working papers and a reliable proof of age.

Nineteen states require documentary proof of age. Twelve states give the issuance of papers to school authorities, six states to labor or factory inspection departments. Illinois and Wisconsin include judges.

In New York working papers are issued by the health authorities. Since the New York law includes in its requirements the best minimum of education, physical ability, and satisfactory proof of age, the New York provisions concerning employment certificates are given in detail.

The importance of obtaining proof of age is ignored in the 16 states which accept the affidavit of parent or guardian, unsupported by further proof. This is worthless as a proof of age and places a premium on perjury. School records are valuable for additional verification of age, but the most reliable sources of information are transcripts of birth certificates, certificates of baptism or passports.

Since the last edition of the Handbook was issued, 5 states, Kentucky, Minnesota, Missouri, Montana and Nebraska have greatly widened the scope of their requirements for working papers.

The District of Columbia, 4 territories and 14 states require no proof of age.

In 12 states, Delaware, Indiana, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, Ohio, Oregon and Wisconsin, the factory inspectors may demand a certificate of physical fitness from some regular or county physician in the case of young persons who may seem physically unable to perform the labor at which they may be employed, and shall have the power to prohibit the employment of any minor that cannot obtain such a certificate. In Kentucky, Nebraska, New York and Ohio, the physical fitness of a child apparently 14 years old is determined by a medical officer of the board or department of health.

Group I. Documentary Proof of Age Required

a.—Working Papers Issued by Health Authorities.

New York Required under 16, employment certificate issued by the commissioner of health or executive officer of board or department of health of city, town or village where child resides or is to be employed, or by such other officer thereof as may be designated by such board, department or commissioner for that purpose, upon application of parent, guardian or custodian of child desiring employment.

Such officer not to issue certificate until he has received, examined, approved and filed the following papers, duly executed, viz., school record of child properly filled out and signed as provided in this article; also, evidence of age showing that child is fourteen years old or upwards, which shall consist of evidence thereof provided in one of the following subdivisions of this section and which shall be required in order herein designated as follows:

(a) *Birth certificate:* Duly attested transcript of birth certificate filed according to law with a registrar of vital statistics or other officer charged with duty of recording births, which transcript shall be conclusive evidence of age of child.

(*b*) *Certificate of graduation:* Certificate of graduation duly issued to child showing that child is a graduate of a public school of the State of New York or elsewhere, having a course of not less than eight years, or of a school in the State of New York other than a public school, having a substantially equivalent course of study of not less than eight years' duration, in which record of attendance of child has been kept as required by compulsory education law, provided that record of school shows child to be at least fourteen years of age.

(*c*) *Passport or baptismal certificate:* Passport or duly attested transcript of certificate of baptism showing date of birth and place of baptism of child.

(*d*) *Other documentary evidence:* In case it shall appear to the satisfaction of officer to whom application is made, as herein provided, for employment certificate, that a child for whom certificate is requested, and who has presented school record, is in fact over fourteen years of age, and that satisfactory documentary evidence of age can be produced, which does not fall within any provisions of preceding subdivisions, and that none of the papers mentioned in said subdivisions can be produced, then and not otherwise he shall present to board of health of which he is an officer or agent, for its action thereon, a statement signed by him showing such facts, together with affidavits or papers as may have been produced before him constituting such evidence of age of child, and board of health, at a regular meeting thereof, may then, by resolution, provide that such evidence of age be fully entered on the minutes of board, and shall be received as sufficient evidence of age of child for purpose of this section.

(*e*) *Physicians' certificates:* In cities of the first class only, in case application for issuance of an employment certificate be made to such officer by a child's parent, guardian or custodian who alleges inability to produce any evidence of age specified in preceding subdivisions, and if child is apparently at least fourteen years of age, such officer may receive and file an application signed by parent, guardian or custodian of child for physicians' certificates. Such application to contain alleged age, place and date of birth, and present residence of child, together with such further facts as may be of assistance in determining age of child. Such application to be filed for not less than ninety days after date of application for physicians' certificates, for an examination to be made of statements contained therein, and in case no facts appear within period or by such examination tending to discredit or contradict any material statement of application, then, and not otherwise, officer may direct child to appear thereafter for physical examination before two physicians officially designated by board of health, and in case such physicians certify in writing that they have separately examined child and that in their opinion child is at least fourteen years of age, officer shall accept such certificates as sufficient proof of age of child for the purposes of this section. In case opinions of physicians do not concur, child to be examined by a third physician and the concurring opinions to be conclusive for the purpose of this section as to age of child.

Such officer to require evidence of age specified in subdivision (*a*) in preference to that specified in any subsequent subdivision, and not to accept evidence of age permitted by any subsequent subdivision unless he shall receive and file in addition thereto affidavit of the parent showing that no evidence of age specified in any preceding subdivision or subdivisions of this section can be produced. Such affidavit to contain age, place and date of birth, and present residence of child, which affidavit must be taken before officer issuing employment certificate, who is hereby authorized and required to administer such oath and who shall not demand or receive a fee therefor. Such employment certificate not to be issued until child further has personally appeared before and been examined by officer issuing certificate, and until such officer shall, after making examination, sign and file in his office a statement that child can read and legibly write simple sentences in English and that in his opinion child is fourteen years of age or upwards and has reached normal development of a child of its age, and is in sound health and is physically able to perform work which it intends to do. In doubtful cases physical fitness to be determined by a medical officer of board or department of health. Every such employment certificate to be signed in presence of officer issuing same, by child, in whose name it is issued.

School Record, what to contain: School record required to be signed by principal or chief executive officer of school which child has attended and to be furnished on demand to a child entitled thereto or to board, department or commissioner of health. To contain statement certifying that child has regularly attended public schools or schools equivalent thereto or parochial schools for not less than one hundred and thirty days during twelve months next preceding his fourteenth birthday, or during twelve months next preceding application for school record and is able to read and write simple sentences in English, has received during such period instruction in reading, spelling, writing, English grammar and geography and is familiar with fundamental operations of arithmetic up to and including fractions. Such school record also to give date of birth and residence of child as shown on records of school and name of its parents or guardian or custodian.

Registry of children employed. Each person owning or operating a factory and employing children therein to keep, or cause to be kept in office of factory, register, in which shall be recorded name, birthplace, age and place of residence of all children so employed under age of sixteen years. Such register and certificate filed in such office to be produced for inspection upon demand of commissioner of labor.

The commissioner of labor may make demand on an employer in whose factory a child apparently under 16 years is employed or permitted or suffered to work, and whose employment certificate is not then filed as required, that employer shall either furnish him within ten days, evidence satisfactory to him that child is in fact over 16 years of age, or shall cease to employ or permit or suffer child to work in such factory. The commissioner of labor may require from such employer same evidence of age of child as is required on issuance of employment certificate.

b.—WORKING PAPERS ISSUED BY SCHOOL AUTHORITIES.

California—Required between 14 and 16, age and schooling certificate approved only by superintendent of schools of city or county or by a person authorized by him, or by local school trustees. This certificate not to be approved unless satisfactory evidence is furnished by last school census, certificate of birth or baptism of such child or public register of birth or in some other manner, that child is of age stated. A duplicate of each age and schooling certificate granted to be filed with the county superintendent of schools. Certificate as to birthplace and age of child to be signed by parent or guardian, or if not living, by child himself. All employers of minors between 14 and 16 must keep record of names, age and residences of such minors.

Connecticut—Required between 14 and 16, certificate of age, signed by town clerk of town where child was born or by a teacher of school which child last attended, or by person having custody of register of said school. If child was not born in the United States, state board of education may investigate, and if child appears to be over 14 years may grant certificate as evidence of age. Parent or guardian of child shall state under oath to secretary or agent of state board of education, date of birth of child, and shall present any family record, passport or other documentary evidence which board may require to show age of child.

Illinois—Required between 14 and 16 years, age and school certificate approved by superintendent of schools or by a person authorized by him in writing.

An age and school certificate not to be approved unless satisfactory evidence is furnished by last school census, certificate of birth or baptism of such child, register of birth of such child with a town or city clerk, or by records of public or parochial schools, that such child is of the age stated in certificate: Provided, That in cases arising wherein above proof is not obtainable, parent or guardian of child shall make oath before the juvenile or county court as to age of such child, and court may issue to such child an age certificate as sworn to.

The age and school certificate of a child under 16 years of age not to be approved and signed until he presents to person authorized to approve and sign same, a school attendance certificate, as prescribed, duly filled out and signed. A duplicate of such age and school certificate to be filled out and to be forwarded to state factory inspector's office. The employment and age and school certificates to be separately printed and filled out, signed and held or surrendered as indicated in prescribed forms. Registers must be kept recording name, age and place of residence.

Kansas—Required between 14 and 16 years, certificate of age signed by members of school board, principal or teacher in district where child resides. When impossible to obtain such certificate, sworn statement of parent or guardian required.

Kentucky—Required between 14 and 16 years (after September 1, 1908, school record after September 1, 1909) employment certificate issued only by the superintendent of schools or by a person authorized by him in writing, or, where there is no superintendent of schools, by person authorized by school committee: provided that no member of school committee or other person authorized as aforesaid shall have authority to approve such certificate for any child then in or about to enter his own employment, or employment of a firm or corporation of which he is a member, officer or employee.

Kentucky—(Continued)

Person authorized to issue employment certificate not to issue such certificate until he has received, examined, approved, and filed the following papers duly executed: (1) School record of child properly filled out and signed as provided in this article. (2) Passport or duly attested transcript of certificate of birth or baptism or other religious record, showing date and place of birth of such child. Duly attested transcript of birth certificate filed according to law with a registrar of vital statistics, or other officer charged with duty of recording births, to be conclusive evidence of age of child. (3) Affidavit of parent or guardian or custodian of a child, which shall be required, however, only in case last mentioned transcript of certificate of birth be not produced and filed, showing place and date of birth of child; which affidavit must be taken before officer issuing employment certificate, who is hereby authorized and required to administer such oath, and who shall not demand or receive a fee therefor.

Employment certificate not to be issued until child's father has personally appeared before and been examined by officer issuing certificate, and until officer shall, after making examination, sign and file in his office a statement that child can read and legibly write simple sentences in English and that in his opinion child is fourteen years of age or upwards and has reached normal development of a child of its age, and is in sound health and is physically able to perform the work which it intends to do. In doubtful cases such physical fitness to be determined by a medical officer of the board or department of health or by the county physician. Every such employment certificate to be signed, in presence of officer issuing same, by child in whose name it is issued.

School record required to be signed by principal or chief executive officer of school which child has attended and to be furnished, on demand, to a child entitled thereto. To contain statement certifying that child has regularly attended public schools or schools equivalent thereto or parochial schools for not less than one hundred days during school year previous to his arriving at fourteen years or during year previous to applying for such school record and is able to read and write simple sentences in English, and has received during such period instruction in reading, spelling, writing and geography and is familiar with fundamental operations of arithmetic up to and including common fractions. School record also to give age and residence of child as shown on records of school and name of its parent or guardian or custodian. Provided, That upon filing with person authorized to issue employment certificates, of affidavit of applicant or of parent, guardian or custodian, showing that diligent effort has been made to obtain school record hereby required and that it cannot be obtained, then person authorized to issue certificate may issue certificate without having received school record, but it shall be his duty, in such case, to examine applicant as to his or her proficiency in each of studies mentioned in this section; and in such case employment certificate shall show that examination was had in lieu of filing of school record.

Massachusetts—Required under 16, age and schooling certificate approved by superintendent of schools or by a person authorized in writing by him or by school committee. Employers to keep two complete lists of all minors employed under 16, one on file and one conspicuously posted near principal entrance of building in which such children are employed, and also keep on file and send to superintendent of schools or to school committee a complete list of names of all minors employed who cannot read at sight or write legibly simple sentences in the English language.

Employment certificate to be approved only by superintendent of schools or by a person authorized by him in writing, or if there is no superintendent of schools, by a person authorized by school committee; no member of a school committee or other person authorized as aforesaid shall approve certificate for any minor then in or about to enter his own employment, or employment of a firm or corporation of which he is a member, officer or employee.

An age and schooling certificate not to be approved unless satisfactory evidence is furnished by last school census, certificate of birth or baptism of such minor, or register of birth of such minor with a city or town clerk, that such minor is of age stated in certificate, except that other evidence under oath may be accepted in case superintendent or person authorized by school committee, decides that neither last school census, nor certificate of birth or baptism, nor register of birth is available for the purpose. The age and schooling certificate of a minor under 16 years of age not to be approved and signed until he presents to the person authorized to approve and sign it an employment ticket duly filled out and signed. A duplicate of each age and schooling certificate to be filled out and kept on file by school committee. The employment ticket and age and schooling certificate to be separately printed, filled out, signed and held or surrendered, as indicated in forms prescribed.

No certificate to be approved by any person for a minor under 16 years of age, who intends to be employed in a factory, workshop, or mercantile establishment, unless such person is satisfied that minor is able to read at sight and write legibly simple sentences in English—required for admission to fourth grade.

Minnesota—Required for children under 16 years for employment in school term, employment certificate issued by superintendent of schools or by some one authorized by him or where there is no superintendent, by chairman of the school board or someone authorized by him, provided that no one shall have authority to issue such certificates for any child in or about to enter his employment.

Such officer not to issue certificate until he has received, examined, approved and filed the following papers:

(1) School record of child, properly filled out and signed as provided in this act. (2) Duly attested transcript of birth certificate filed according to law with officer charged with duty of recording births, which shall be conclusive evidence of the birth of child. (3) Affidavit of parent or guardian or custodian of child, showing place and date of birth, but such affidavit shall not be required unless the last mentioned transcript of certificate of birth cannot be produced; which affidavit must be taken before officer issuing employment certificate, who is hereby authorized and required to administer such oath and shall not demand or receive a fee therefor. Such employment certificate not to be issued until child has personally appeared before and been examined by officer issuing the same until such officer shall, after making an examination, make and retain for inspection by the public, a statement that in his opinion, child is 14 years of age or upwards and has reached

Minnesota—(Continued)

normal development of a child of its age and is in sound health and physically able to perform work which it intends to do. In doubtful cases, physical unfitness to be determined by medical officer of board or department of health. Every such employment certificate to be signed in presence of officer issuing same, by child in whose name it is issued; provided, however, that employment certificate herein provided for shall be issued only to such children as : (1) Those whose poverty or that of their families renders it necessary for them to work for their support or that of their families; (2) Those who can produce required school record.

Nebraska—Required for children under 16 years, employment certificate issued by superintendent of schools or by person authorized by him in writing, or where there is no superintendent of schools, by person authorized by school district officers provided that no one have authority to issue certificate for child in or about to enter his employment.

Such officer not to issue certificate until he has received, examined, approved and filed the following papers duly executed: (1) School record of child, properly filled out and signed, showing that child has completed work of eighth grade of the public schools, or its equivalent, or is regularly attending night school. (2) A passport, or duly attested transcript of certificate of birth or baptism, or other religious or official record, showing date and place of birth of child. Duly attested transcript of birth certificate filed according to law with a registrar of vital statistics, or other officer charged with duty of recording births, to be conclusive evidence of the age of such child. (3) Affidavit of parent, or guardian, or custodian of child, to be required, however, only in case none of documents mentioned in clause two (2) of this section can be produced and filed, showing place and date of birth of child; affidavit to be taken before officer issuing employment certificate.

Such employment certificate not to be issued until child has personally appeared before, and been examined by, officer issuing certificate and until officer shall, after making examination, sign and file in his office statement that child can read and legibly write simple sentences in English and that, in his opinion child is fourteen years of age, or upwards, and has reached normal development of a child of its age, and is in sound health and is physically able to perform work which it intends to do. In doubtful cases physical fitness to be determined by medical officer of board or department of health, or by physician provided by state board of inspection.

Whenever person authorized to issue employment certificate is in doubt about age of child, he may require party or parties making application for certificate to appear before judge of juvenile court, or county judge, where age of child shall be determined, and judgment of the court shall be final and binding upon person issuing certificate. Notice of hearing before court to be given to some one of persons mentioned in section two authorized to demand inspection of employment certificates. Every employment certificate to be signed in presence of officer issuing same by child in whose name it is issued.

Any truant officer, state commissioner of labor, or his deputies, or any member of state board of inspection may make demand on any employer in whose place of business a child apparently under age of sixteen years, is employed, and whose employment certificate is not filed as required, that such employer shall either furnish him within ten days, evidence satisfactory to him that child is in fact over sixteen years of age, or shall cease to employ child. Same evidence of age of child may be required from such employer as is required on issuance of employment certificate; employer furnishing such evidence shall not be required to furnish any further evidence of age of child. In case such employer shall fail to produce and deliver to truant officer, state commissioner of labor, or deputy state commissioner of labor, or member of state board of inspection, within ten days after demand for same, such evidence of age of child as may be required under provisions of this act, and shall thereafter continue to employ child, proof of giving of notice and of failure to produce and file such evidence shall be prima facie evidence, in any prosecution brought for a violation of this section, that child is under sixteen years of age and is unlawfully employed.

Ohio—Required between 14 and 16 years, age and schooling certificate, approved only by superintendent of schools or by a person authorized by him, or by clerk of board of education. This certificate not to be approved unless satisfactory evidence of age is furnished by last school census, certificate of birth or baptism, or in some other manner, that said child is of age required, and that he has successfully completed studies required in the Revised Statutes of Ohio, or can read and write legibly the English language.

Employer to keep record of name, birthplace, date of birth and place of residence of every boy between 14 and 16 years, and every girl between 14 and 18 years.

Any child working in or in connection with any of aforesaid establishments, or in distribution or transmission of merchandise or messages, who appears to inspector of workshops and factories to be under legal age, or who refuses to give to inspector his or her name, age and place of residence, shall be forthwith conducted by inspector to office of judge of juvenile or probate court for examination. If inspector is in doubt as to physical fitness of a boy under sixteen years of age, or a girl under eighteen years of age found working in or in connection with any of aforesaid establishments, or in the distribution or transmission of merchandise or messages, he shall require a certificate signed by medical officer of board of health certifying that child is of sound health and physically able to perform work or service he or she is required to do, and every such health certificate shall be signed by child in whose name it is issued in presence of officer issuing same, and which examination shall be made and certificate issued without any expense whatever to child.

Oregon—Required between 14 and 16 years, age and schooling certificate executed, issued, and approved only by superintendent of schools, or by a person authorized by him in writing, or by board of school directors. This certificate not to be approved unless satisfactory evidence is furnished by last school census, duly attested transcript of certificate of birth or baptism or other religious record or register of birth of such child, that child is of the age stated.

This certificate not to be approved and signed unless child presents to person authorized to sign same an employment ticket issued by the board of child labor inspectors, duly filled out and signed as prescribed. The certificate shall contain a statement certifying that the child can read at sight and write legibly simple sentences in the English language, that it has reached the normal development of a child of its age, and is in sound health and is physically able to perform the work which it intends to do, and that it has regularly attended public schools or a school equivalent thereto, for not less than 160 days during school year previous to arriving at age of 14 years, or during the year previous to applying for such school record,

Oregon—(Continued)
and has received during such period instruction in reading, spelling, writing, English grammar and geography, and is familiar with the fundamental operations of arithmetic to and including fractions.

Rhode Island—Required between 14 and 16 years, certificate given by or under the direction of school committee of city or town in which child resides, certifying that child has completed 14 years of age, and stating name, date and place of birth of child, substantiated by a duly attested copy of birth certificate or baptismal certificate, stating also name and residence of the person having control of such child.

Washington—Required under 15 years for employment in school term, certificate given by superintendent of schools, excusing child from attendance at school and setting forth reason for such excuse, residence and age of the child, and time for which such excuse is given. For employment in mines, certificate of age from parent required.

c.—WORKING PAPERS ISSUED BY STATE LABOR OR FACTORY INSPECTION DEPARTMENTS OR JUDGES.

Maine—Required for children under 16, to be presented before employment to employer, certified copy of town clerk's record of birth of child, or certified copy of baptismal record showing date of birth, or passport showing date of birth, and without production and presentation of said town record, baptismal record or passport, child shall not receive employment applied for. Employer shall retain such town record, baptismal record or passport and shall issue to child a certificate containing name of child, name of parents, if living, or guardian, if any, with residence of child, parent or guardian, and such other facts as may be required by inspector of factories, workshops, mines and quarries, which certificate shall be furnished in blank by said inspector and shall be approved as to form by attorney general.

Employer shall furnish to inspector a copy of each certificate issued immediately after issuance, which copy shall be retained by inspector. When child leaves employment, employer shall return to child the copy of town record, baptismal record or passport furnished by him as aforesaid and shall immediately notify inspector that child has left his employment, and date of leaving.

Inspector of factories, workshops, mines and quarries, or either of his assistants, may demand names of children under sixteen years of age employed, and may require that certificates of age prescribed in this section, be produced for inspection, and failure to produce same shall be prima facie evidence that employment of child is illegal.

Maryland—Required under 16, employment-permit issued in Baltimore City by bureau of statistics and in other cities or counties by any member of board of health or principal health officer. Employment permit not to be issued unless satisfactory evidence is furnished by duly attested transcript of certificate of birth or baptism of child, or other religious record, or register of birth, or affidavit of parent or guardian. Affidavit to be required only in case proper authorities certify that birth certificate is not on record. Certificate to include statement that child can read and write English and has reached normal development of a child of its age and is in sound health and physically able to perform work which it intends to do.

Missouri—Required under 16 years, age certificate issued by state factory inspector or any assistant factory inspector and in any county where state factory inspector has no permanent office, by any justice of the peace; provided that no person authorized to issue an age certificate shall have authority to approve certificate for child then in or about to enter his own establishment, or employment of a firm or corporation of which he is a member, officer or employee. Persons approving age certificates have authority to adminster oath provided therein, but no fee to be charged therefor. Every person issuing or approving age certificates to keep record of same, and forward to office of state factory inspector duplicate of each certificate issued or approved. All such age certificates to be subject to review by state factory inspector and by him cancelled if he finds that certificates have been obtained through fraud, misrepresentation or falsification of facts. In such cases state factory inspector to give written notice to employer, who shall at once cause minor affected to be dismissed.

Age certificate not to be approved unless satisfactory evidence is furnished by certificate of birth or baptism of child, register of birth of child with officer of city or town designated to keep register of births, or by records of public or parochial schools attended by child, that child is of age stated in certificate, provided that in cases wherein above proof is not obtainable, parents or guardian of child to make oath before state factory inspector or assistant [factory] inspector or before juvenile or county court as to age of child, and state factory inspector or assistant factory inspector or court may issue to such child age certificate as sworn to.

Inspectors of factories may require that age certificates and lists of minors employed in factories, workshops, mercantile institutions and all other places where minors are employed be produced for their inspection on demand.

Montana—Required for children under 16, issued by commissioner of the bureau of agriculture, labor and industry. Employer to countersign certificate, and return same to commissioner to be filed. Commissioner to compile and preserve from reports made to him by county superintendent of schools, complete list of name, age, date of birth and sex of each child under 16 who is or may become resident of the state, and such list to be official record of age.

New Jersey—Required under 16: I. Native born. Affidavit of parent or guardian stating name of child, residence, place and date of birth, name of father and maiden name of mother, church attended, if any, school last attended, if child was baptized, name and location of church where baptized. There must accompany affidavit transcript of record of child's birth, or if it cannot be obtained, and child was baptized, a certified copy of baptismal record, II. Foreign born children. Same affidavit as above, with an additional statement that child named in affidavit is the same mentioned and described in passport under which child was admitted to this country. A true copy of passport must in all cases be attached to affidavit. III. Other children. Commissioner of labor shall have power to issue permits of employment to children upon the production of evidence of the child's age satisfactory to him; provided, that he shall first be satisfied that child cannot obtain a transcript of birth record, a baptismal certificate or passport.

For employment in mercantile establishments, in addition to the above, the commissioner, assistant or any inspector is empowered to demand of any parent or guardian, proof of age of child satisfactory to the commissioner, and such parent, or guardian shall, within five days after demand is made, furnish

New Jersey—(Continued)
to such officer proof of child's age; and in event of the failure to procure and furnish proof, child shall be discharged by employer upon notice in writing signed by commissioner, and shall not be re-employed until proof shall have been furnished to commissioner.

Wisconsin—Required between 14 and 16 years, written permit issued by commissioner of labor, state factory inspector, any assistant factory inspector or by judge of the county court or municipal court or by judge of a juvenile court where such child resides. When any doubt exists concerning age of child, verified baptismal certificate to be produced, or duly attested birth certificate, or in case such certificate cannot be secured, record of age stated in first school enrolment of such child. If such proof does not exist, or cannot be secured, such other proof to be produced as may be satisfactory to person issuing permit. Permit not to be issued to any child unable to read and write simple sentences in English or in his native language. Employers must keep register giving name, age, date of birth and place of residence.

Group II.—Affidavit or Statement of Parent or Child as Proof of Age

Alabama—Required under 18, affidavit of parent or guardian, stating age and place of birth. Affidavits to be filed in office of judge of probate, to be numbered and labelled and index thereof made and preserved.

Arkansas—Required over 14, affidavit of parent or guardian certifying to age and date of birth. For children between 12 and 14 years of aged or disabled fathers, required that father shall produce and file in factory certificate from county clerk certifying to facts required, provided that county clerk shall issue such certificate only on strict proof in writing and under oath. No certificate shall be granted or accepted for longer than one year.

Delaware—Required between 14 and 16 years, sworn statement of parent or guardian, stating name, date and place of birth of child; also certificate stating names of parents or guardians, name and number of school last attended by child, and number of weeks in attendance, such certificate to be signed by teacher or teachers of child; provided, that in case the age of child be not known, such teacher shall certify that age given is the true age to the best of his or her knowledge. Register to be kept by employer recording name, age, day of birth and place of residence of every child under 16 years employed.

Georgia—Required for any child employed in a factory, affidavit of parent or guardian stating age and date of birth, also for children between 10 and 12 of an aged or disabled father, certificate from the ordinary of the county, certifying to facts required; no ordinary to issue certificate except on strict proof in writing and under oath, and no certificate to be granted for longer than one year, or accepted after one year from date of certificate, by employer.

Idaho—Required under 16 years, age and schooling certificate issued by any justice of the peace or notary public. To contain affidavit of parent or guardian stating date and place of birth of child and certifying that child can read at sight and write legibly simple sentences in English and has received instruction in spelling, English grammar and geography and is familiar with fundamental operations of arithmetic up to and including fractions, or has similar attainments in another language, and that child is in sound health and physically able to perform work which it intends to do.

Indiana—Required between 14 and 16 years, affidavit by parent or guardian or by minor himself, certifying date and place of birth. Register to be kept by employer recording name, birthplace, age and place of residence of minors under 16.

Kansas—Required between 14 and 16 years, when school certificate of age cannot be obtained, sworn statement of parent or guardian, stating age of child.

Michigan—Required under 16, certificate sworn to by parent or guardian or by child himself, stating that child can read and write and giving age, date and place of birth. Register must be kept recording name, birthplace, age and place of residence.

Missouri—Required under 16 years (by compulsory education law, compare p. 32 for documentary proof of age) affidavit of parent or guardian concerning age of child for certificate of age issued by attendance officers; such certificate to have signature of child for whom it is issued, signature of persons who made and took affidavit.

Mississippi—Required under 12 years, affidavit of parent or guardian, stating place of birth, last school attendance, grade of studies, name of school and of teacher. Employer to keep affidavit and register.

New Hampshire—Required under 16, statement of age, sworn to by parent or guardian before superintendent of schools or some person authorized by school board. Also certificate from superintendent of schools or authorized person that child can read at sight and legibly write simple sentences in the English language.

North Carolina—Required under 13, written statement of age by parent or guardian.

Pennsylvania—Required between 14 and 16 years, employment certificate issued by factory inspector or any of his office force, the deputy factory inspectors, or school superintendents, or principal teacher of common school in localities not under the jurisdiction of any superintendent. This certificate to state name, age, date, place of birth, and description of child, its residence, and residence of parent or guardian, and ability of said child to read and write simple sentences in English language.

Before certificate of employment is issued, person authorized to issue it, first to demand and obtain of parent or guardian affidavit stating age, date and place of birth of child.

South Carolina—Required under 12, affidavit of parent or guardian stating age of child.

Tennessee—Required under 14, sworn statement of age made by parent or guardian, unless age of child is known by employer.

West Virginia—Required for boys over 12, employed in coal mines, in cases of doubt as to age, affidavit of parent or guardian.

Group III.—No Proof of Age Required

Alaska
Arizona
Colorado
District of Columbia
Florida
Hawaii
Iowa
Louisiana
Nevada
New Mexico
North Dakota
Oklahoma
South Dakota
Texas
Utah
Vermont
Virginia
West Virginia (except in coal mines)
Wyoming

SCHEDULE F—DANGEROUS OCCUPATIONS

The operation of elevators or of dangerous machinery by minors under certain ages is prohibited in 17 states.

A large group of states prohibit occupations dangerous to health or morals; chiefly the employment of children where liquors are sold, rope-walking and kindred exhibitions. This prohibition is usually in the penal code and more or less completely non-enforced. It is desirable to have it embodied in the labor law also, and enforced by the factory inspectors. This general provision is effective principally in case of damage suits following upon accidents to minors.

Illinois, Kentucky, Minnesota, Missouri, Ohio and Wisconsin specifically prohibit the employment of children under sixteen years in a list of manufactures involving many different kinds of dangerous machinery, and forbid employment of children under sixteen years in special manufactures.

These are manufacture of paints, colors or white lead, and compositions involving the use of acids. Ohio, in addition, prohibits employment in dipping, dyeing or packing matches, manufacture or storing of explosives; for girls under 16, manufacture or packing tobacco. Wisconsin prohibits in addition employment in any tobacco warehouse, cigar or other factory where tobacco is manufactured or prepared.

Group I.—Operation of Elevators is Prohibited

Connecticut—to 16 years.
Illinois—to 16 years.
Indiana—to 18 years.
Iowa—to 14 years.
Kentucky—to 16 years.
Massachusetts—to 16 years; for any elevator running at a speed of more than 100 feet a minute, to 18 years.
Michigan—to 14 years.
Minnesota—to 16 years; for elevators running at a speed of more than 200 feet a minute, to 18 years.
Missouri—to 14 years.
Nebraska—to 14 years. [feet a minute, to 18 years.
New York—to 15 years; for any elevator running at a speed of more than 200
Ohio—to 16 years.
Pennsylvania—to 16 years.
Wisconsin—to 16 years.

Group II.—Operation or Cleaning Dangerous Machinery is Prohibited

Illinois—to 16 years; 14 different kinds of machinery specified.
Indiana—boys to 16 years; girls to 18 years.
Iowa—boys to 16 years; girls to 18 years.
Kentucky—to 18 years; to 16 years operation of 14 different kinds of machinery.
Louisiana—to 12 years.
Massachusetts—to 14 years.
Michigan—boys to 16 years; girls to 21 years.
Minnesota—to 16 years in 14 different kinds of machinery.
Missouri—to 16 years in operation of 14 different kinds of machinery.
New Jersey—to 16 years.
New York—boys to 18; girls to 21 years.
Ohio—to 16 years, in 15 different kinds of machinery.
Pennsylvania—to 16 years.
Rhode Island—To 16 years (unless same is necessary and is approved by factory inspector as not dangerous).
Wisconsin—to 16 years in 17 different kinds of machinery.

Group III. Specified Manufactures are Prohibited

Illinois—to 16 years, manufacture of paints, colors or white lead, or compositions needing acids.
Kentucky—same as Illinois.
Massachusetts—to 18 years; manufacture of acids (upon complaint and after investigation by state board of health).
Minnesota—to 16 years, same as Illinois.
Missouri—to 16 years, same as Illinois.
New York—to 18 years for boys, and for all women, operation of emery, tripoli, rouge, corundum, stone carborundum, or any abrasive, or emery polishing or buffling wheel, where articles of the baser metals or of iridium are manufactured.
Ohio—to 16 years, same as Illinois, and in addition dipping, dyeing or packing matches; manufacturing packing or storing powder, dynamite, nitroglycerine, compounds, fuzes or other explosives. For girls under 16, assorting, manufacturing or packing tobacco. (See Standard Child Labor Law, p. 61).
Wisconsin—to 16 years, same as Illinois, also in any tobacco warehouse, cigar or other factory where tobacco is manufactured or prepared. (See Standard Child Labor Law, p. 61).

Group IV.—Employment is Prohibited in Saloons or Where Liquors are Sold

TENTATIVE LIST

Alaska
Arizona
California
Colorado
Connecticut
Florida
Georgia
Hawaii
Idaho
Illinois
Kentucky
Maryland
Massachusetts
Michigan
Minnesota
Missouri
Nebraska
New Hampshire
New York
Pennsylvania
South Dakota
Vermont
West Virginia
Wisconsin

Group V.—Vague General Prohibition of Employments Dangerous to Health or Morals

California—to 16 years
Colorado—to 14 years
Connecticut—to 12 years
Delaware—to 15 years
District of Columbia—to 14 years
Georgia—to 12 years
Idaho—to 16 years
Illinois—to 16 years
Indiana—to 15 years
Iowa—to 16 years
Kansas—to 16 years
Kentucky—to 16 years
Massachusetts—to 16 years
Michigan—girls to 21 years; boys to 18 years
Minnesota—to 16 years
Missouri—to 14 years
Nebraska—to 16 years.
New Jersey—to 16 years
New York—to 16 years
Ohio—to 16 years
Pennsylvania—to 15 years
Rhode Island—to 16 years
Virginia—to 14 years
West Virginia—to 15 years
Wisconsin—to 16 years
Wyoming—to 14 years

SCHEDULE G—EXEMPTIONS

The best laws have no exemptions. Every exemption is an injury to the law and to the class exempted, being a deprivation of protection.

The most important and harmful exemptions allowing work under age have been embodied in Schedule A. These are exemptions of orphans, children of disabled fathers or widowed mothers, and the special exemption of the canning industry in several states.

The exemption of orphans from the protection of the law is especially to be deplored. It places on children already handicapped the additional burden of wage earning at an age when, according to the very statute which grants the exemption, children in more fortunate circumstances need protection.

There remain to be noted the officials authorized to grant exemptions, and the reasons for granting.

As has been pointed out under Hours of Labor, difficulty of enforcing a time limit by the day and week increases with every irregularity and variation. A fixed closing hour known to the whole community and applying to all employees of a given class is easiest to enforce and most valuable to the workers. The exemptions all permit departures from such a fixed standard.

Thirteen states permit overtime work beyond the established legal work day. Every such variation tends to make the established legal limit illusory, and difficulties of inspection insuperable.

A—WORK IS ALLOWED UNDER AGE

Authorities Who Grant Exemptions

California—Exemptions between 12 and 14 years, granted on account of poverty by judge of juvenile or superior court of county, upon sworn statement of parent that child is past 12 years and after investigation by a probation or truant officer, or where there is none, by some other competent person. Permit shall specify kind of work allowed and length of time for which it is issued. Granted also to children over 12, for employment in vacation, by principal of school attended in term preceding such vacations.

Colorado—Between 14 and 16 years, granted by judge of county court, of county in which child resides, if it would be in the opinion of said judge, for child's best interest to be so exempted. Granted also on account of poverty by district or county superintendent of schools.

Florida—Under 12 (to be filed with employer), for employment during vacation, in store, office, hotel or any place of work except factories, mines, bowling alleys and where intoxicating liquors are sold, certificate authorizing such employment granted by county or municipal judge. Such certificate not to be issued by judge except upon affidavit of parent or guardian, stating age and date of birth and that there is no free public school then in session, and certificate from a practising physician that he has examined child, and that child is, in his opinion, physically able to perform with reasonable safety to itself, the work for which it is sought to be employed.

Minnesota—Under 14 and illiterates under 16, granted on account of poverty by school board or board of school trustees.

Missouri—Under 16, granted on account of poverty by any court of competent jurisdiction.

New York—Over 12 years, for employment in mercantile establishments in villages and cities of the third class, during summer vacation of public schools. Vacation certificate required, to be issued in same manner, upon same conditions and on like proof that child is 12 years or upward, and is in sound health, as is required for issuance of employment certificate (see p. 24) except that school record shall not be required.

North Dakota—Under 14 years, granted on account of poverty by board of education, of a city or village and by school board of other districts.

Oregon—Between 12 and 14 years, granted by board of inspectors of child labor, in any suitable work, in any school vacation extending over a period of more than two weeks.

South Carolina—Under 12 years, granted on account of poverty, provided that guardian of child shall furnish an affidavit duly sworn to before magistrate or clerk of court of county, stating need of child's support, and provided that the officer before whom affidavit is subscribed shall endorse upon back thereof his approval and consent.

Texas—For illiterates under 14, whose parents are incapacitated to support them.

Virginia—Over 12 years, granted to orphans, or dependent children or children of invalid parents by circuit court of county or corporation court of city or judge in vacation or mayor or justice of peace. Certificate authorizing such employment to be sent to commissioner of labor within ten days of issuance.

Washington—Between 12 and 14, granted on account of poverty by any superior court judge living within residence district of child, for any occupation not in his opinion dangerous to health or morals of child.

Wisconsin—Over 12 years, in vacation, granted by county judge, municipal judge, judge of juvenile court or register of probate of county in which child resides, or by commissioner of labor or state factory inspector or assistant factory inspector. No permit to be issued without proof of age.

B—WORK IS ALLOWED OVER TIME

I.—On Saturday or for certain days preceding Christmas

Colorado—Children under 16 may work more than 8 hours in the day, in the week before and following Christmas Day.

Minnesota—Children over 14 years of age may be employed in mercantile establishments on Saturdays and for 10 days each year before Christmas until 10 in the evening; provided that this permission is not so construed as to permit such children to work more than 10 hours in any one day or over 60 hours in any one week.

New York—Girls over 16 may work in stores more than 10 hours and after 10 o'clock on Saturday (provided the total number of hours in a week does not exceed 60) and between December 15 and January 1.

Pennsylvania—Children under 16 years may work in retail mercantile establishments after 9 p. m. and longer than 60 hours a week, and 12 hours in one day on Saturday of each week, and during 20 days, beginning December 5, and ending December 24; Provided that within said 20 days, working hours shall not exceed 10 hours per day, or 60 hours per week.

Rhode Island—Minors under 16 years may work after 8 p. m. on Saturdays, and 4 days before Christmas.

II.—To make up lost time due to some accident or breakdown in the machinery

New Hampshire—Women and children under 18 may be employed for this purpose more than 10 hours in a day.

South Carolina—Children under 12 (whose labor is permissible only if they are allowed to work because they are children of widows or of disabled fathers or are orphans) may be employed for this purpose after 8 p. m., provided that under no circumstances a child below 12 years of age shall work later than 9 p.m.

All operatives may be employed for this purpose more than 10 hours in one day and 60 hours in one week, to the extent of 60 hours in one year.

III.—When a different apportionment of hours of labor is made for the sole purpose of making a shorter day's work for one day in the week

Indiana—Boys under 16 and girls under 18 may work more than 60 hours in one week or 10 hours in one day; but not more hours in any one week than would make an average of 10 hours per day for whole number of days which such persons work during such week.

Massachusetts—Children under 18 years (and women) may be employed more than 10 hours in one day, but in no case shall the hours of labor exceed 58 in one week.

New York—Minors over 16 may be employed in factories more than 10 hours in one day, (a) regularly, in not to exceed 5 days a week, (b) irregularly, in not to exceed 3 days a week, provided that no such person shall be employed more than 12 hours in any one day or more than 60 hours in any one week, and that the provisions as to notice and time book be fully complied with.

IV.—Either (a) when a different apportionment of hours is made for the sole purpose of making a shorter workday for one day of the week, or (b) when it is necessary to make repairs to prevent the interruption of the ordinary running of the establishment

California—Minors under 18 may work more than 9 hours in one day, but in no case must hours of labor exceed 54 hours in a week.

Maine—Women and boys under 16 may work more than 10 hours a day, but in no case must hours of labor exceed 60 hours in the week.

New Hampshire—Women and minors under 18 may be employed more than 10 hours a day.

Rhode Island—Women and minors under 16 may work more than 10 hours in one day.

Connecticut—Women and minors under 16 may work more than 10 hours in one day.

Michigan—Women under 21 and boys under 18 may be employed more than 60 hours in one week for second cause (b), and may be employed more than 10 hours in any one day for first cause (a).

V.—To prevent waste or destruction of material in process of manufacture

Pennsylvania—Boys over 14 years, who have not been employed between 6 a. m. and 9 p. m., may be employed for not more than 9 consecutive hours in any one day after 9 p. m., provided that in establishments where night work is hereby permitted, and where the nature of employment requires two or more working shifts in 24 hours, males over 14 years may be employed partly by day and partly by night, not more than 9 consecutive hours.

SCHEDULE H—ENFORCEMENT

I.—THE CHILD LABOR LAWS

The chief characteristic of the enforcement of child labor laws in the United States is inequality. Judges, juries, county and prosecuting attorneys, probation officers, truant officers, and factory inspectors figure in the varying processes of enforcement in the different states.

Manufacturing states without factory inspectors and mining states without mine inspectors afford no adequate protection to working children. When probation officers attached to juvenile courts make occasional arrests of employers, it is not the prime duty of these officers to make systematic search for children in factories, workshops, etc., and to ascertain the sanitary conditions under which work is done. Truant officers also are insufficient for enforcing the closing hours and stopping night work.

The value of child labor laws depends upon the number and quality of the inspectors, their tenure of office, and the amount of money appropriated for their use. Where factory inspectors are politicians and truant officers are aged and decrepit, the children suffer accordingly.

The District of Columbia, 9 states and 4 territories provide no special officials for inspection. Violation of the law may be prosecuted by the county attorney, if complaint is made to him by any interested person. Eight states have entirely given over to the school authorities the enforcement of child labor laws, and in many others the truant officers as well as the factory inspectors are authorized to enter places of employment, to demand certificates of age or schooling, to make arrests and to enter prosecutions for violation through the prosecuting attorney.

Nowhere is the inequality in our child labor legislation more conspicuous than in a collection of reports of enforcing officials. Some states make no provision for publication, e. g. Delaware, where the factory inspector makes a quarterly confidential report to the Governor of the state. Other states have biennial reports and in them one-half of the data is inevitably belated when made public.

Dilatory printing retards the use and reduces the value of many annual reports. Thus the report for 1905 contains the latest Illinois facts accessible in March 1908.

The essentials of a good report are:—

1. Promptness. To show existing conditions and work done by the department, and to suggest remedies for abuses found, it is imperative that reports give information that is current, and not several years old.

2. Clearness and fullness. In every report specific figures should be included on the following points :

   (a) Number of inspections made.
   (b) Number of children found at work, male and female.
   (c) Number of children dismissed, with causes.
   (d) Number of employment certificates issued and refused (if given out by department).
   (e) Violations and nature thereof.
   (f) Prosecutions.
   (g) Fines imposed.
   (h) Name, address and assignment of inspectors.

The names and addresses of state labor officials charged with the enforcement of child labor laws are included in order that any person in any state, where such officials are appointed to enforce these laws, may turn to this list to discover precisely upon whom the responsibility for enforcement or non-enforcement rests.

The list of names has been obtained by correspondence with the heads of labor departments of the various states. It is possible that additional appointments have been made since these were received (March, 1908). No attempt is made to give the names and addresses of truant officers or school authorities owing to the obvious difficulty of obtaining accurate lists.

DIRECTORY OF OFFICIALS FOR ENFORCEMENT

a.—State Labor Officials

Alabama—State inspector of jails and almhouses specially charged to inspect factories in which women and children are employed. To inspect without notice at least four times a year. Authorized to remove children found working or detained in factories contrary to law, and to remove children afflicted with infectious diseases. To institute prosecutions for violations and furnish solicitors of circuit or county with names and addresses of all necessary witnesses.

Shirley Bragg, Inspector, Montgomery, Ala.

California—Commissioner of Labor, salary $3,000; deputy, salary $1,800; assistants not exceeding 6, salaries not to exceed $4 per day, all expenses allowed.

John D. Mackenzie, Commissioner, Ferry Building, San Francisco.
Fred C. Jones, Deputy Commissioner, Ferry Building, San Francisco.
D. McLennan, Special Agent.
P. H. Maloney, Special Agent.
Katherine Kelly, Special Agent.

Delaware—Factory and Workshop Inspector, salary, $1,000. J. Austin Ellison, Inspector, Wilmington.

Illinois—Chief State Factory Inspector, salary $2,000; assistant chief, salary $1,250, and 18 deputy factory inspectors, salaries $1,000. Appropriation to cover all necessary expenses, $10,000.

Edgar T. Davies, Chief, Security Building, Chicago.

DEPUTY INSPECTORS

Evelyn M. Atchley, 1563 N. Talman Ave., Chicago.
Jane M. Canedy, 1495 Wellington Ave., Chicago.
Helen M. Todd, 460 Elm St., Chicago.
Jordan Chavis, 3560 Vernon Ave., Chicago.
John FitzSimmons, 6122 S. Park Ave., Chicago.
Jacob Goldman, 1650 Melrose St., Chicago.
Barney Cohen, 4943 Champlain Ave., Chicago.
Clark Johnson, 6347 St. Lawrence Ave., Chicago.
J. M. Patterson, 4440 Berkley Ave., Chicago.
M. S. Rieger, 697 N. Artesian Ave., Chicago.
J. E. Schlake, 1473 N. Ashland Ave., Chicago.
William Ehn, Galesburg.
Adam Menche, Kewanee.
Jacob F. Swank, Forreston.
Eugene Whiting, Canton.
Charles Ducray, East St. Louis.
R. W. Hamilton, Moline.
J. M. Woolington, Monticello.
M. J. Jordan, Princeton.
John Elder, Carthage.
A. L. Van Ness, Bloomington.

Indiana—Chief Inspector, salary $1,800 and actual expenses and a sufficient number of deputies not to exceed 5.

W. E. Blakely, Chief Inspector, Capitol Building, Indianapolis.
David F. Specs, Chief Deputy, Capitol Building, Indianapolis.

DEPUTY INSPECTORS

T. S. Williamson, Anderson.
John Fitzgibbons, Muncie.
C. E. Butcher, Connersville.
Peter Kline, South Bend.

Iowa—Commissioner of Labor Statistics, salary $1,500, deputy and one factory inspector, salaries $1,200, and expenses not to exceed $1,500.

Edward D. Brigham, Commissioner, Des Moines.
Alfred Shepherd, Deputy, Des Moines.
Frank Bradley, Factory Inspector, Des Moines.

Kansas—Commissioner of Labor, salary $2,000, assistant commssioner, salary $1,500.

W. L. A. Johnson, State Factory Inspector, State Capitol Building, Topeka.
Owen Doyle, Assistant State Factory Inspector, Topeka.
C. E. Bramlette, Deputy State Factory Inspector, Topeka.

Kentucky—Labor Inspector, salary $1,200, and one assistant, salary $1,000, and traveling expenses.

"The grand jury shall have inquisitorial powers to investigate violations of this act, and judges of the circuit courts of this state shall specially charge the grand jury at the beginning of each term of the court to investigate violations of this act."

Thomas A. Davis, Labor Inspector, Louisville.
Pat Filburn, Assistant Labor Inspector, Louisville.

Louisiana—Factory Inspector, appointed in incorporated cities and towns by the mayor, and in parishes by the police jury, salary $750. (Applies only to cities having population of 10,000.)

Miss Jean Gordon, Factory Inspector, 1800 Prytania Street, New Orleans.

Maine—Inspector of Factories and Workshops, salary $1,000 and reasonable expenses; and a sufficient number of assistant deputies, salaries $2 per day and reasonable expenses while engaged in duty. For violation of section requiring children under 15 to attend school for a required period during employment, school committees and superintendent must report to the county attorney who shall prosecute therefor.

George E. Morrison, Inspector, Biddeford, Maine.

Maryland—Chief of the Bureau of Statistics, salary $2,500; assistant, salary $2,000, and six child labor inspectors, salaries $900; two factory inspectors.

Charles J. Fox, Chief, Equitable Building, Baltimore.
Charles F. Baughman, Assistant, Equitable Building, Baltimore.

Mrs. M. A. Richardson.
George Mann.
M. Herzog.
Hammond Dorsey.
Michael J. Lindsay.
Edwin Forrest.
Frank Armiger.
Bettie A. Griffiss.

Massachusetts—Chief of the District Police, salary $3,000; deputy chief, salary $2,400 and 16 factory inspectors, salaries $1,500 and all necessary traveling expenses. Truant officers appointed by the school committee of every city and town.

Jophanus H. Whitney, Chief, State House, Boston.
Joseph A. Moore, Deputy Chief, State House, Boston.

Factory Inspectors

Arlon S. Atherton, State House, Boston.
Charles S. Clerke, State House, Boston.
Charles A. Dam, Worcester.
Robert Ellis, Fall River.
James W. Hoitt, North Adams.
Wm. J. McKeever, State House, Boston.
Malcom Sillars, Salem.
Mary A. Nason, State House, Boston.
James R. Howes, Springfield.
Frank C. Wasley, Lowell.
Ernest E. Cleveland, State House, Boston.
Samuel L. Ryan, State House, Boston.
John E. Griffin, State House, Boston.
John H. Plunkett, State House, Boston.
Mary E. Halley, Fall River.

For enforcement of the sanitary provisions of the factory laws, 15 state inspectors of health:

Dr. Charles E. Morse, Wareham.
Dr. Adam S. McKnight, 355 North Main St., Fall River,
Dr. Wallace C. Keith, 237 North Main St., Brockton.
Dr. Elliott Washburn, 50 Broadway, Taunton,
Dr. Harry Linenthal, 327 Blue Hill Ave., Roxbury (Boston).
Dr. Albert P. Norris, 728 Massachusetts Ave., Cambridge.
Dr. J. William Voss, 108 Cabot St., Beverly.
Dr. William Hall Coon, 70 Newbury St., Lawrence.
Dr. Charles E. Simpson, Lowell Hospital, Lowell.
Dr. William W. Walcott, 32 West Central St., Natick.
Dr. Melvin G. Overlock, 91 Chandler St., Worcester.
Dr. Lewis Fish, 7 Highland Ave., Fitchburg.
Dr. Harvey T. Shores, 177 Elm St., Northampton.
Dr. Herbert C. Emerson, 177 State St., Springfield.
Dr. Lyman A. Jones, 170 Main St., North Adams.

Michigan—Commissioner of Labor, salary $2,000 and expenses; deputy commissioner, salary $1,500 and expenses. Such assistants as may be necessary, at least one of whom shall be a woman.

Malcolm J. McLeod, Commissioner, Lansing.
R. H. Fletcher, Deputy Commissioner, Lansing.

Deputy Inspectors

Mrs. M. C. Girardin, Detroit.
Henry J. Eikhoff, Detroit.
William J. Downey, Detroit.
John W. Rose, Kalamazoo.
Frank T. Ley, Grand Rapids.
Miss E. Griswold, Grand Rapids.

John J. Knight, Detroit.
George Houston, Detroit.
L. C. Watkins, Jackson.
Miss Katherine Heath, Detroit.
Miss L. M. Burton, Grand Rapids.
A. C. Galbraith, North Branch.
S. A. Hall, Bay City.
Peter Fitzpatrick, Ishpeming.

Minnesota—Commissioner of Labor, $2,600 and expenses; assistant commissioner of labor, $1,800, statistician, $1,300, one deputy commissioner $1,200, two at $1,100 each; five factory inspectors, $5,500, five assistant factory inspectors, $5,000, and one woman inspector $1,200 (total appropriation $30,800).

Hon. W. H. Williams, Commissioner, St. Paul.
Hon. E. J. Lynch, Assistant Commissioner, St. Paul.
Frank E. Hoffman, Statistician, St. Paul.
H. V. Koch, Deputy Commissioner, St. Paul.
Louis Vogler, Deputy Commissioner, Minneapolis.
August Hagberg, Deputy Commissioner, Duluth.

FACTORY INSPECTORS

Peter J. Karpen, St. Paul.
Frank W. Murray, Minneapolis.
George Kaufman, Minneapolis.
T. F. Thomas, St. Paul.
P. F. Herbert, Minneapolis.

ASSISTANT FACTORY INSPECTORS

T. J. Moonan, Winona.
R. F. Lamb, Slayton.
N. P. Olson, Anoka.
W. H. Harvey, Mine Inspector, Eveleth.
Louis Gerard, St. Cloud.
John Whalen, Jr., Benson.

Mississippi—Sheriff of the county in which manufacturing establishments employing children are located, specially charged to visit such establishments at least once each month. Each county health officer charged to visit without notice of his intention to do so, all manufacturing establishments employing children in his county at least twice each year and to report to sheriff children whose physical condition renders them incapacitated to perform work required of them. Sheriff to remove such children promptly.

Missouri—State Factory Inspector (since 1907 can inspect only in cities of more than 10,000 inhabitants). Attendance officers, appointed and salary fixed by school board; vested with authority to enter any office, factory or business house employing children, and to make arrests.

J. C. A. Hiller, Factory Inspector, St. Louis.

Nebraska—Deputy Commissioner of Labor, salary $1,500 and the Board of Inspectors of Child Labor, composed of 5 persons, 2 at least of whom shall be women, to serve without compensation.

John J. Ryder, Deputy Commissioner, Lincoln.
Rev. James Wise, Chairman, South Omaha.
Mrs. Draper Smith, Omaha.
Mrs. M. Coomb, Ord.
E. B. Murphy, Brady.
Charles A. Robbins.

New Jersey—Commissioner of Labor, salary $3,500; assistant commissioner, salary $2,000 and 11 inspectors, two of whom shall be women, salaries $1,500 and all necessary expenses allowed.

Lewis T. Bryant, Commissioner, State House, Trenton.
John I. Holt, Assistant Commissioner, State House, Trenton.

INSPECTORS

Henry Kuehnle, Egg Harbor City.
Louis Holler, 304 Mickle St., Camden.
Joseph Milburn, 303 Centre St., Trenton.
Edward McClintock, 15 Wallace St., Newark.
Andrew McCardell, Plainfield.
William Schlachter, 7 Condit Place, Orange.
Heber Wells, 412 E. 30th St., Paterson.
James Stanton, Sussex.
Mary F. Van Leer, 173 High St., Passaic.
August Graf, 212 Thirteenth St., Hoboken.
Mary McKeen, 38 W. State St., Trenton.

SPECIAL INSPECTORS

Thomas McHugh, 33 Gillette Place, Newark.
Neill McCarthy, 867 Martin St., Elizabeth.

New York—The Board or Department of Health or Health Commissioners, for employment in mercantile establishments; in factories, the Commissioner of Labor, salary $5,000; first deputy commissioner of labor, salary $2,700; and not more than 60 deputies, salaries $1,000, $1,200 and $1,500, ten of whom are women.

John Williams, Commissioner, Albany.
William W. Walling, First Deputy Commissioner, Albany.
Henry L. Schnur, Assistant Factory Inspector, Albany.
Thomas A. Keith, Assistant Factory Inspector, New York City.
Daniel O'Leary, Superintendent of Licenses, New York City.
C. T. Graham-Rogers, Medical Inspector, New York City.

DEPUTY FACTORY INSPECTORS

Mathew J. Flanagan, N. Y. City.
Dennis J. Hanlon, N. Y. City.
Charles B. Ash, N. Y. City.
Anna C. Bannon, N. Y. City.
James H. Bell, N. Y. City.
Maurice Barshell, N. Y. City.
George S. Cangialosi, N. Y. City.
James Davie, N. Y. City.
William H. Donahue, N. Y. City.
Margaret Finn, N. Y. City.
William Ford, N. Y. City.
Lily F. Foster, N. Y. City.
Rebecca B. Gourlie, N. Y. City.
William H. Guyett, N. Y. City.
Charles L. Halberstadt, N. Y. City.
George L. Horn, N. Y. City.
Ella Nagle, N. Y. City.
William J. Neely, N. Y. City.
William Pearson, N. Y. City.
Abraham Sirota, N. Y. City.
William M. Rich, N. Y. City.
Charles Whelan, N. Y. City.
Joseph S. Altschul, N. Y. City.
Solomon N. Brenner, N. Y. City.
May G. Davies, N. Y. City.
William S. Finney, N. Y. City.
Nathan Herzstein, N. Y. City.
Charles F. Miller, Jr., N. Y. City.
George F. O'Neill, N. Y. City.
Florence C. Wilkinson, N. Y. City.
E. H. Williamson, N. Y. City.
George C. Daniels, N. Y. City.
Luman S. Arnold, Syracuse.
Hiram Blanchard, Albany.
Anna L. Greene, Albany.
G. I. Harmon, Hoosick Falls.
James W. Ireland, Ithaca.
Kate L. Kane, Rochester.
Charles M. Lessels, Troy.
W. G. Lownsbery, Utica.
Frank S. Nash, Binghamton.
Joseph O'Rourke, Utica.
Silas Owen, Cohoes.
Josie A. Reilly, Albany.
J. B. Sliter, Elmira.
D. C. Sullivan, Rochester.
William E. Tibbs, Newburgh.
David S. Yard, Olean.
Sidney T. Wilson, Buffalo.
Ernest M. Wilber, Buffalo.

Louis A. Havens, Special Agent, New York City.
Charles M. Gilmore, Deputy Mine Inspector, Binghamton.
Gustav Werner, Tunnel Inspector, New York City.

Ohio—Chief Inspector of Workshops and Factories, salary, $2,000; thirteen district and two bakeshop inspectors, salaries, $1,200; all necessary traveling expenses, not to exceed $500 a man, allowed; 8 visitors who shall be women, same salaries and powers as deputy inspectors. Inspectors have same authority as truant officers to enforce school attendance of any child found violating the school laws.

J. H. Morgan, Chief Inspector, Columbus.
Frank Bach, 528 Schofield Building, Cleveland
Theodore Wagner, 528 Schofield Building, Cleveland.
A. F. Spaeth, Room 3, Bavaria Building, Cincinnati.
William Woehrlin, Room 3, Bavaria Building, Cincinnati.
John F. Ward, 1028 Star St., Youngstown.
Ralph C. Shipman, 236 East Second St., Elyria.
Col. E. S. Bryant, Bloomdale.
John W. Bly, 528 East Lincoln St., Findlay.
L. W. Ralston, Mechanicstown.
Chas. W. Highfield, 224 West Main St., Zanesville.
Richard Lloyd, P. O. Box 633, Columbus.
C. B. Baker, 409 West Water St., Piqua.
E. A. Brown, 1402 Freeman St., Toledo.
John A. Mohr, 229 Chestnut St., Ironton.
E. M. Dilley, 922 Steubenville Ave., Cambridge.

Oregon—The Board of Inspectors of Child Labor, composed of 5 persons, 3 at least of whom shall be women, to serve without compensation. Vested with power to enter factories and stores.

H. G. Kundret, 30 E. Eleventh St., N., Portland.
Mrs. Millie R. Trumbull, 305 Jefferson St., Portland.
Rev. Wm. G. Eliot, 681 Schuyler St., Portland.
Mrs. Sarah A. Evans, Oswego.
Mrs. Turner Oliver, LaGrande, Oregon.

Pennsylvania—Factory Inspector and 39 deputy factory inspectors, 5 of whom shall be women, at salaries of $1,200, traveling expenses allowed.

J. C. Delaney, Inspector, Harrisburg.

DEPUTY INSPECTORS

T. A. Lee, 2046 Reed St., Phila.
W. J. Crowley, 916 Mifflin St., Phila.
P. H. Kenny, 1631 Porter St., Phila.
C. H. Breithbarth, 5821 Chester Ave., Phila.
Meredith B. Leach, 733 Walnut St., Phila.
M. Keller (Mrs.), 5144 Sansom St., Phila.
W. S. Godfrey, 2545 Cedar St., Phila.
Jas. Knight, Jr., 3716 N. Randolph St., Phila.
James Patterson, Bristol.
J. W. Davis, Plymouth.
George W. Nape, Scranton.
E. W. Bishop, Towanda.
J. K. Robinson, Mifflintown.
E. P. Gamble, Altoona.
James R. Patterson, Beaver Falls.
J. C. McClymonds, Portersville.

Joseph Sumner, 4138 Terrace St., Phila.
L. L. Knisely, 231 Pine St., Harrisburg.
Joseph P. Quinn, 37 W. Princess St., York.
T. A. Bradley, Lilly.
M. D. Howe, Delmar.
A. W. McCoy, Meadville.
Mary S. Glenn, Holmesburg, Phila.
H. N. Eisenbrey, Olney, Phila.
Gus Egolf, Norristown.
M. E. Bushong, May.
Harry McBechtel, Pottstown.
Annie E. Leisenring, 432 Chew St., Allentown.

M. N. Baker, Corry.
Samuel Beatty, 5728 Knox St., Phila.
Robert Hamilton, 40 E. Coulter St., Phila.
W. J. Leary, Chester.
James Sterling, Latrobe.
G. W. Heltzel, Bedford.
Anna White, 6816 McPherson St., Pittsburg, [E. E.
George I. Rudolph, 1406 Western Ave., Allegheny City.
David E. Weaver, 2320 Sidney St., Pittsburg.
Elizabeth Torrens, 5903 Penn Ave., Pittsburg.

Rhode Island—Chief Factory Inspector, salary $2,000, and two assistant factory inspectors—one of whom shall be a woman, salaries, $1,500. All necessary expenses allowed, not to exceed $2,000. One or more truant officers appointed, and salary fixed by the school committee of each town or city.
J. Ellery Hudson, Chief Inspector, State House, Providence.
Mrs. Helen M. Jenks, Assistant Inspector, State House, Providence.
Joseph Roy, Assistant Inspector, State House, Providence.

Tennessee—Grand jury has inquisitorial powers to investigate violations and judges of the circuit courts of the state shall specially charge the grand jury at the beginning of each term of the court to investigate violations.
Commissioner of Labor Statistics and Mines, expenses of the department not to exceed $4,000 per year; commissioner to act as inspector of mines.

Virginia—Commissioner of Labor, salary $1,500. Appropriation for department not to exceed $4,500.
James B. Doherty, Commissioner, Richmond.

Washington—Commissioner of Labor.
Charles F. Hubbard, Commissioner, Olympia.

West Virginia—State Commissioner of Labor.
I. V. Barton, Commissioner, Wheeling.

Wisconsin—Commissioner of Labor, salary $2,200; deputy commissioner, $1,600, and 12 factory inspectors, salaries $1,200: 1 factory inspector, salary $1,500.
J. D. Beck, Commissioner, Madison.

FACTORY INSPECTORS

J. E. Vallier, Milwaukee.
Miss Rosa M. Purdue, Milwaukee.
Ira L. Lockney, Milwaukee.
Wm. Straub, Milwaukee.
J. A. Norris, Madison.
J. R. Bloom, Neenah.

H. P. Peterson, Superior.
August Lehnhoff, Milwaukee.
August Kaems, Sheboygan.
T. A. Walby, Hudson.
C. S. Porter, Fox Lake.
D. D. Evans, Racine.

b.—School Officials

Colorado—Truant officers appointed and salaries fixed by board of school directors; vested with police powers and with authority to enter workshops, factories, and all other places where children may be employed, in the way of investigation or otherwise.

Connecticut—Agents appointed by state board of education for terms of not more than one year, salaries not to exceed $5 a day, including expenses. The school visitors or town school committee in every town, shall once or more in every year examine into the situation of children employed in all manufacturing establishments, and ascertain whether all provisions of the law are observed, and report all violations to proper prosecuting authority.

Idaho—Probation officers, or in counties where there are none, one or more school trustees to visit places of employment and ascertain whether minors are employed contrary to law; and to bring complaints to attention of prosecuting attorney for prosecution. Any reputable citizen may also bring complaints for violations.

Montana—Truant officers, appointed and salary fixed by school board. Vested with police powers, with authority to serve warrants and to enter workshops, factories, stores and all other places where children may be employed.

New Hampshire—State Superintendent of Public Instruction, and deputies appointed by superintendent, necessary expenses to be allowed by Governor and council. Also truant officers appointed by district school boards and paid by towns.

North Dakota—Truant officer appointed by board of education in any city of more than 5,000 inhabitants, or by president of school board of any district.

South Dakota—District school board, chairman of board of education in independent districts, or county superintendent.

Vermont—Town superintendent, appointed and compensation fixed by boards of school directors. Truant officers, two to be appointed by selectmen of a town and mayor of a city; salary at rate of $2 a day for time actually spent.

No Special Officials for Inspection

Alaska
Arizona
Arkansas
District of Columbia (has no law)
Florida
Georgia
Hawaii (has no law)
Nevada (has no law)
New Mexico (has no law)
North Carolina
South Carolina
Texas
Utah
Wyoming

PENALTIES

The penalties for infringement of the child labor laws fall under two heads: Penalties for the employer and penalties for the parent or guardian.

Penalty for Employer for Employing Child under Age (a) and Over Time (b)

Fines Only

Alabama—Not less than $50, nor more than $100.

Arkansas—Not more than $100.

Connecticut—Not more than $20 for each offense.

Delaware—Not less than $50, nor more than $100.

Georgia—Usual penalty for misdemeanor.

Idaho—Not more than $50, and after notification by truant or probation officer, not less than $5, nor more than $20, for each day of employment thereafter. Applies to (a).

Illinois—Not less than $5 nor more than $100 for each offense and to stand committed until such fines and costs are paid.

Kentucky—Not more than $50 for first offense, and not more than $200 for second offense.

Maine—Not less than $25 nor more than $50 for each offense.

Maryland—Not less than $5 nor more than $50, and after notification by inspector or attendance officer, not less than $5 nor more than $20, for each day of employment.

Massachusetts—Not less than $20 nor more than $50. Applies to (b) in textile mills.

Minnesota—Not less than $20 nor more than $50 for each offense after notification by commissioner of labor or truant officer, not less than $5 nor more than $20 for each day.

Missouri—Not less than $25 nor more than $100 for each offense.

Nebraska—Not more than $50 and after notification by truant officer, deputy commissioner of labor or member of state board of inspection, not less than $5 nor more than $20 for each day of employment.

New Hampshire—Not more than $50 for the use of the district for each offense.
New Jersey—$50 for each offense.
North Carolina—Punishment at discretion of court for misdemeanor.
North Dakota—Not less than $10 nor more than $50 Applying to (a).
Rhode Island—Not more than $500. Applying to (a). Not more than $20 for each offense. Applying to (b).
South Dakota—Not less than $10 nor more than $50. Applying to (a).
Tennessee—Not less than $25 nor more than $250. Applying to (a). Not less than $25 nor more than $100. Applying to (b).
Vermont—$50 for each offense.
Virginia—Not less than $25 nor more than $100.
Washington—Not less than $10 nor more than $25. Applying to (b).
West Virginia—Not less than $10 nor more than $20 for each offense. Applying to (a).

Fines or Imprisonment

California—Not less than $50 nor more than $200, or by imprisonment for not more than 60 days, or by both such fine and imprisonment for each offense.
Colorado—Not less $100 nor more than $500 and imprisonment in the county jail not less than 2 months or more than 4 months. Applying to (a).
Florida—Not more than $1000 or imprisonment for not more than 6 months, or both.
Indiana—Not more than $50 for the first offense, and not more than $100 for the second offense to which may be added imprisonment for not more than ten days and for the third offense not less than $250, and not more than 30 days' imprisonment in the county jail. Applying to (a).
Iowa—Not more than $100 or imprisonment for not more than 30 days.
Kansas—Not less than $25 nor more than $100, or imprisonment for not less than 30, nor more than 90 days.
Louisiana—Not less than $10 nor more than $25 or imprisonment in the parish jail not more than 30 days, or both, in the discretion of the court.
Massachusetts—Not more than $300 or imprisonment for not more than 6 months and for every day thereafter, after notification by truant officer or inspector of factories, not less than $20 nor more than $100 or imprisonment for not more than 6 months.
Michigan—Not less than $5 nor more than $100, or imprisonment for not less than 10 nor more than 90 days or both at discretion of the court.
Montana—Not less than $25 nor more than $500 or imprisonment for not less than 30 days nor more than 6 months or both. Applies to (a).
Mississippi—Not less than $50, nor more than $100, or imprisonment for not less than 10 or more than 60 days.
New York—Not less than $20 nor more than $100 for first offense; for second offense not less than $50 nor more than $200 or imprisonment for not more than 30 days, or both; for third offense not less than $250 or imprisonment for not more than 30 days, or both.
North Carolina—Punishment at the discretion of the court.
Ohio—Not less than $10 nor more than $50 or imprisonment for not less than 10 nor more than 30 days.
Oregon—Not less than $10 nor more than $25 for first offense, not less than $25 nor more than $50 for second and imprisonment for not less than 10 nor more than 30 days for third and each succeeding offense.
Pennsylvania—Not less than $25 nor more than $500, or imprisonment for not less than 10 days or more than 60 days for each offense.
South Carolina—Not less than $10 nor more than $50, or imprisonment for not more than 30 days at the discretion of the court.

Washington—Not less than $10 nor more than $500 or imprisonment in the county jail for not more than six months for each offense, or both. Applying to (a).

West Virginia—For employment in coal mines, not less than $50 nor more than $500. In default of payment, in the discretion of the court, imprisonment in county jail for not more than 3 months.

Wisconsin—Not less than $25 nor more than $100 or imprisonment not more than 30 days.

Penalty for Employer for Employing Child During School Hours

Fines Only

Arizona—Not less than $25 nor more than $100.

Connecticut—$20 for every week such child is so employed.

Colorado—Not less than $25 nor more than $50.

Idaho—Not more than $50 and for each day of employment after notification by truant or probation officer not less than $5 nor more than $20.

Illinois—Not less than $5 nor more than $100 for each offense and to stand committed until such fine and costs are paid.

Massachusetts—Not more than $50 for the first offense and for every day thereafter, after notification by truant officer or by inspector of factories, fine of not less than $5 nor more than $20.

Minnesota—Not more than $50 for first offense, after notification by commissioner of labor or truant officer, not less than $5 nor more than $20 for each day of employment thereafter.

Missouri—Not less than $20 nor more than $50 and costs.

Montana—Not less than $25 nor more than $50 for each offense.

Nebraska—Not more than $50 and after notification by truant officer, deputy commissioner of labor or member of state board of inspection, not less than $5 nor more than $20 for each day of employment.

New Hampshire—Not more than $50 for each offense.

New York—$50 for each offense.

North Dakota—Not less than $20 nor more than $50 and costs for each offense.

Pennsylvania—$10 for first offense and $30 for each subsequent offense.

South Dakota—Not less than $10 nor more than $50.

Vermont—Not more than $50.

Washington—Not more than $25.

West Virginia—Not less than $10 nor more than $20 for each offense.

Fines or Imprisonment

Ohio—Not less than $10 nor more than $50 or imprisonment for not less than 10 nor more than 30 days.

Oregon—Not less than $10 nor more than $25 for first offense, not less than $25 nor more than $50 for second, and imprisonment for not less than 10 nor more than 30 days for third and each succeeding offense.

Wisconsin—Not less than $25 nor more than $100 or imprisonment not more than 30 days.

Penalty for Employer for Neglecting (a) to Keep File of Age and Schooling Certificates and (b) to Produce Them for the Inspection of the School Authorities or Factory Inspectors

Fines Only

Alabama—Not more than $200. Applying to (a).

Arkansas—Not more than $100. Applying to (a).

Connecticut—Not more than $100.

Delaware—Not less than $50 nor more than $100.

Idaho—Failure to produce age and schooling certificate is prima facie evidence of illegal employment of child whose certificate is not produced.

Illinois—Not less than $5 nor more than $50.

Kentucky—Not more than $50 for first offense and not more than $200 for second offense.

Maine—Failure to produce age certificate is prima facie evidence that the employment of the child for whom it is demanded, is illegal. Not less than $25 nor more than $50.

Massachusetts—Failure to produce or to have listed age and schooling certificate, shall be prima facie evidence of the illegal employment of any child whose certificate is not produced or name not listed.

Maryland—Not less than $5 nor more than $50 for the first offense and for every day thereafter, after notification by an attendance officer, or inspector, not less than $5 nor more than $20. Failure to produce age or schooling certificate shall be prima facie evidence of the illegal employment of the child whose certificate is not porduced.

Minnesota—Not more than $50, for first offense. Failure to produce age or school certificate shall be prima facie evidence of the illegal employment of the child for whom it is not produced.

Missouri—Not less than $10 nor more than $50 and costs.

Nebraska—Not more than $50 and after notification by truant officer, deputy commissioner of labor or member of state board of inspection not less than $5 nor more than $20, for each day of employment. Failure to produce employment certificate or list required shall be prima facie evidence of illegal employment of child for whom it is not produced.

New Hampshire—Not more than $50 for each offense. Applying to (a).

New Jersey—$50 for each offense.

Rhode Island—Not less than $10 nor more than $50.

Vermont—Not more than $50.

Fines or Imprisonment

California—Not less than $50 nor more than $200 or imprisonment of not more than 60 days, or both fine and imprisonment.

Indiana—Not more than $50 for first offense and not more than $100 for second offense to which may be added imprisonment for not more than 10 days, and for third offense fine of not less than $250 and not more than 30 days' imprisonment in the county jail.

Iowa—Not more than $100 or imprisonment for not more than 30 days.

Louisiana—$100 for each offense or imprisonment in the parish jail not more than 30 days, or both at discretion of court.

Michigan—Not less than $5 nor more than $100, or imprisonment for not less than 10 days nor more than 90 days, or both at discretion of court.

Montana—Not less than $25 nor more than $500 or imprisonment for not less than 6 months or both.

New York—Not less than $20 nor more than $100 for first offense; for second offense not less than $50 nor more than $200 or imprisonment for not more than 30 days, or both such fine and imprisonment; for third offense not less than $250 or imprisonment for not more than 60 days or both fine and imprisonment.

Ohio—Not less than $10 nor more than $50 or imprisonment for not less than 10 nor more than 30 days.

Oregon—Not less than $10 nor more than $25 for first offense, not less than $25 nor more than $50 for second, and imprisonment for not less than 10 nor more than 30 days for each succeeding offense.

Pennsylvania—Not less than $25 nor more than $500, or imprisonment for not less than 10 days nor more than 60 days for each offense.

Wisconsin—Not less than $25 nor more than $100 or imprisonment not more than 30 days.

Penalty for Employer of Illiterates Who Do Not Go to Night School

Fines Only

Colorado—Not less than $25 and not more than $100.
Connecticut—Not more than $50.
Illinois—Not less than $5 nor more than $100 and to stand committed until such fines and costs are paid.
Maryland—Not more than $100 for each offense.
Minnesota—Not less than $20 nor more than $50.
Nebraska—Not more than $50.
New Hampshire—Not more than $20.
New York—$50 for each offense.

Fines or Imprisonment

California—Not less than $50 nor more than $200, or imprisonment for not more than 60 days, or both fine and imprisonment for each offense.

Penalty for Employer for Refusing Entrance to or Obstructing Factory Inspectors or School Authorities

Fines Only

California—Not less than $50 nor more than $200.
Illinois—Not less than $5 nor more than $100 for each offense and to stand committed until such fines and costs are paid.
Maine—$50.
Maryland—Not less than $50 for each offense.
Missouri—Not less than $25 nor more than $100.
New Jersey—$50 for each offense.
Pennsylvania—Not more than $500.
Rhode Island—Not more than $10.

Fines or Imprisonment

Alabama—Not less than $50 nor more than $500 for first offense, for subsequent offenses not less than $500 or imprisonment for one year.
Florida—Not more than $1000 or imprisonment for not more than 6 months or both.
Indiana—Not more than $50 for first offense and not more than $100 for second offense to which may be added imprisonment for not more than 10 days, and for third offense fine of not less than $250 and not more than 30 days' imprisonment in the county jail.
Iowa—Not more than $100 or imprisonment in the county jail not exceeding 30 days.
Kentucky—Not more than $100 or imprisonment not more than 6 months or both fine and imprisonment at discretion of jury.
Michigan—Not less than $5 nor more than $100 or imprisonment for not less than 10 nor more than 90 days, or both, at discretion of court.
Nebraska—Not more than $50 or imprisonment for not more than 30 days.
New York—Not less than $20 nor more than $100 for first offense, for second offense not less than $50 nor more than $200 or imprisonment for not more than 30 days, or both such fine and imprisonment; for third offense not less than $250, or imprisonment for not more than 30 days, or both such fine and imprisonment.
Oregon—Not less than $10 nor more than $25 for first offense, not less than $25 nor more than $50 for second offense, and imprisonment for not less than 10 nor more than 30 days for third and each succeeding offense.
Wisconsin—Not less than $25 nor more than $100 or imprisonment not more than 30 days.

Penalty for Parent for Allowing Child to Be Employed Under Age (a), or Over Time (b)

Fines Only

Alabama—Not less than $500.

Arkansas—Not more than $100.

Connecticut—Not more than $60 and every week of such employment to be a distinct offense.

Georgia—Usual penalty for misdemeanor.

Illinois—Not less than $5 nor more than $25 and to stand committed until such fines and costs are paid.

Kentucky—Not more than $50 for first offense, and not more than $200 for second offense.

Maine—Not less than $25 nor more than $50 for each offense.

Maryland—Not less than $5 nor more than $50, and for every day thereafter, after notification by inspector or attendance officer, not less than $5 nor more than $20.

Massachusetts—Not more than $50 for the first offense, and for every day thereafter that employment continues, after notification by a truant officer or by an inspector of factories, fine of not less than $5 nor more than $20 for (a); not less than $50 nor more than $100 for (b).

Minnesota—Not less than $20 nor more than $50 for each offense.

Missouri—Not less than $10 nor more than $100.

Nebraska—Not more than $50 and after notification by truant officer, deputy commissioner of labor or member of state board of inspection not less than $5 nor more than $20, for each day of employment.

New Jersey—$50 for each offense.

Oregon—Not less than $5 nor more than $25.

Pennsylvania—Not more than $500.

Rhode Island—Not more than $20 for each offense. Applying to (b).

West Virginia—Not less than $10 nor more than $20 for each offense. Applying to (a).

Fines or Imprisonment

California—Not less than $50 nor more than $200 or imprisonment of not more than 60 days, or both, for each offense.

Florida—Not more than $500 or imprisonment for not more than 90 days or both.

Iowa—Not more than $100 or imprisonment for not more than 30 days.

Michigan—Not less than $5 nor more than $100, or imprisonment for not less than 10 nor more than 90 days or both at discretion of court.

Missouri—Not less than $10 nor more than $100, or imprisonment in county jail for not less than 2 nor more than 10 days or both, for each offense. Applying to (a).

South Carolina—Not less than $10 nor more than $50, or imprisonment for not more than 30 days, at discretion of court. Applying to (a).

Vermont—Not more than $50, and for violation after being notified by truant officer not less than $5 nor more than $20 for each day of such violation.

Wisconsin—Not less than $5 nor more than $25 or imprisonment not more than 30 days.

Penalty for Parent for Allowing Illiterate Child to Be Employed Without Attending Day or Night School

Fines Only

Maryland—Not more than $20.

Minnesota—Not less than $20 nor more than $50 for each offense.

Nebraska—Not more than $20.

New Hampshire—Not more than $20.

Fines or Imprisonment

Michigan—Not less than $5 nor more than $100, or imprisonment for not less than 10 nor more than 90 days, or both, at discretion of court.

Penalty for Making Any False Statements in an Age or Schooling Certificate

Fines Only

Alabama—Punishment for perjury.

Arkansas—Not more than $100.

Connecticut—Not more than $20.

Georgia—Usual penalty for misdemeanor.

Idaho—Punishment for perjury.

Illinois—Not less than $3 nor more than $20 for each offense and to stand committed until such fine and costs are paid.

Maine—$100.

Massachusetts—Not more than $50.

Minnesota—Not more than $50.

Missouri—Not more than $25.

Nebraska—Not more than $50.

New Hampshire—Not less than $20 nor more than $50 for each offense.

New Jersey—$50 for each offense.

North Dakota—Not less than $20 nor more than $50 and costs.

Oregon—Not less than $5 nor more than $50.

South Dakota—Not less than $10 nor more than $50.

Vermont—Not more than $50.

Fines or Imprisonment

California—Not less than $5 nor more than $50, or imprisonment for not more than 30 days, or both fine and imprisonment.

Florida—Not more than $500 or imprisonment for not more than 90 days or both.

Iowa—Not more than $100 or imprisonment for not more than 30 days.

Maryland—Not more than $50 or imprisonment for not more than 30 days, or both, at discretion of the court.

New York—Not less than $20 nor more than $100 for first offense; for second offense, not less than $50 nor more than $200, or imprisonment for not more than 30 days, or both; for third offense not less than $250, or imprisonment of not more than 60 days, or both.

North Carolina—Punishment at the discretion of the court, for misdemeanor.

Pennsylvania—Not less than $25 nor more than $500, or imprisonment for not less than 10 nor more than 60 days.

South Carolina—Not less than $10 nor more than $50, or imprisonment for not more than 30 days at discretion of the court.

Tennessee—Punishment usual for perjury.

2. THE COMPULSORY EDUCATION LAWS

Almost all of the states having compulsory education laws provide for their enforcement by authorizing the appointment of one or more truant officers in each school district. These officers are usually appointed by the school authorities; they must notify parents of violations of compulsory education laws, and are given police powers for the arrest of truants. Their salaries are usually fixed by the boards appointing them and vary from no compensation to $2 for each working day.

Penalty for Parent for Failure to Send Children to School

Fines Only

Connecticut—Not more than $5, each week's failure to be a distinct offense.

District of Columbia—Not more than $20.

Idaho—Not less than $5 nor more than $25 for the first offense; not less than $10 nor more than $50 for the second and each subsequent offense; besides costs.

Illinois—Not less than $5 nor more than $20 and costs and to stand committed until paid.

Iowa—Not less than $3 nor more than $20 for each offense.

Kansas—Not less than $5 nor more than $25.

Maryland—Not more than $5 for each offense.

Massachusetts—Not more than $20.

Montana—Not less than $5 nor more than $20.

Nebraska—Not less than $5 nor more than $25.

Nevada—Not less than $50 nor more than $100 for the first offense, not less than $100 nor more than $200 for subsequent offenses.

New Hampshire—$10 for first offense; $20 for each subsequent offense.

North Dakota—Not less than $5 nor more than $20 for the first offense, not less than $10 nor more than $50 for subsequent offenses and costs.

Rhode Island—Not more than $20 for each offense.

South Dakota—Not less than $10 nor more than $20 for each offense and to stand committed until fine and costs are paid.

Vermont—Not less than $5 nor more than $25.

Washington—Not more than $25.

West Virginia—$2 for first offense and $5 for each subsequent offense.

Fines or Imprisonment

California—Not more than $10, or imprisonment for not more than 5 days for first offense, for subsequent offenses, not less than $10 nor more than $50, or imprisonment for not less than 5 nor more than 25 days, or both fine and imprisonment.

Colorado—Not less than $5 or more than $20, or court may require parent or guardian to give bond of $100, with sureties to the approval of judge of county court, conditioned that he or she will cause child to attend some recognized school within 5 days after and to remain during term prescribed by law. Upon failure to pay fine or furnish bond, parent or guardian to be imprisoned in the county court not less than 10 days nor more than 30 days.

Delaware—Not more than $2 on first conviction and not more than $5 for subsequent conviction, in default of fine, imprisonment not more than 2 days for first conviction, and not more than 5 days for subsequent convictions.

Indiana—Not less than $5 nor more than $25 and in discretion of the court, imprisonment in county jail for not less than 2 nor more than 90 days.

Kentucky—Not more than $25 for the first offense, and for subsequent offenses, not more than $100 or imprisonment for not more than 50 days or both.

Maine—Not more than $25 or imprisonment for not more than 30 days.

Michigan—Not less than $5 nor more than $50, or imprisonment in county or city jail for not less than 2 nor more than 90 days, or both fine and imprisonment, at discretion of court.

Minnesota—Not more than $50 or imprisonment for not more than 30 days.

Missouri—Not less than $10 nor more than $25, or imprisonment for not less than 2 nor more than 10 days, provided that sentence may be remitted if child is immediately placed and kept in school.

New Jersey—Punishable as a disorderly person.

New Mexico—Not less than $5 nor more than $25, or imprisonment for not more than 10 days.

New York—Not more than $5 for first offense and for each subsequent offense not more than $50, or imprisonment for not more than 30 days or both fine and imprisonment.

Ohio—Not less than $5 nor more than $20, or imprisonment for not less than 10 nor more than 30 days.

Oregon—Not less than $5 nor more than $25 or imprisonment not less than 2 nor more than 10 days or both, at discretion of court.

Pennsylvania—Not more than $2 for first offense and not more than $5 for each subsequent offense, and in default imprisonment for not more than 2 days for first offense and not more than 5 days for each subsequent offense.

Wisconsin—Not less than $5, nor more than $50, or imprisonment not more than 3 months, or both.

Wyoming—Not less than $5 nor more than $25 for first offense to which may be added at discretion of court, for subsequent offenses, imprisonment for not more than 90 days.

WHAT CONSTITUTES EFFECTIVE CHILD LABOR LAWS

Effective legislation dealing with child labor involves many differing elements including the child, the parent, the employer, the officials charged with the duty of enforcing the statutes, and finally the community which enacts laws, provides schools for the children when they are prohibited from working, supports and authorizes officers for the enforcement of the laws, prescribes penalties for their violation, assists dependent families in which the children are below the legal age for work. In the long run, the effectiveness of the law depends upon the conscience of the community as a whole far more than upon the parent and the employer acting together.

With the foregoing reservations and qualifications duly emphasized, the following summaries are believed to outline the substance of the effective legislation which it seems reasonable to try to secure before the close of the year 1910. They deal only with provisions for the child as a child, taking for granted the provisions for fire-escapes, safeguards for machines, toilet facilities and all those things which the child shares with the adult worker.

An effective child labor law rests primarily upon certain definite prohibitions among which are the following:

LABOR IS PROHIBITED

(1) for all children under the age of fourteen years,
(2) for all children under sixteen years of age who do not measure sixty inches and weigh eighty pounds,*
(3) for all children under sixteen years of age who cannot read fluently and write legibly simple sentences in the English language, and have not completed the curriculum of the first eight years of the public schools.
(4) for all children under the age of sixteen years, between the hours of 5 p. m. and 8. a. m., or longer than eight hours in any twenty-four hours, or longer than forty-eight hours in any week.
(5) for all children under the age of sixteen years in specified occupations dangerous to life, limb, health or morals.

THE CHILD

Effective legislation requires that before going to work the child satisfy a competent officer appointed for the purpose, that it
(1) is fourteen years of age, and
(2) is in good health, and
(3) measures at least sixty inches and weighs eighty pounds, and
(4) is able to read fluently and write legibly simple sentences in the English language, and
(5) has attended school a full school year during the twelve months next preceding going to work.

THE PARENT

Effective child-labor legislation requires that the parent
(1) keep the child in school to the age of fourteen years and longer if the child has not completed its required school work, and

---

*This measure is not now specified in any statute though it is implied in the statutes of several states.

(2) take oath as to the exact age of the child before letting it begin to work, and

(3) substantiate the oath by producing a transcript of the official record of the birth of the child, or the record of its baptism, or some other religious record of the time of the birth of the child, and must

(4) produce the record of the child's school attendance, signed by the principal of the school which the child last attended.

THE EMPLOYER

Effective child-labor legislation requires that the employer before letting the child begin to work,

(1) obtain and place on file ready for official inspection papers showing
  - (*a*) the place and date of birth of the child substantiated by
  - (*b*) the oath of the parent corroborated by
  - (*c*) a transcript of the official register of births, or by a transcript of the record of baptism, or other religious record of the birth of the child, and by
  - (*d*) the school record signed by the principal of the school which the child last attended, and by
  - (*e*) the statement of the officer of the Board of Education or the Board of Health designated for the purpose, that he has approved the papers and examined the child.

(2) After permitting the child to begin to work, the employer is required to produce the foregoing papers on demand of the school-attendance officer, the health officer and the factory inspectors.

(3) In case the child cease to work, the employer must restore to the child the papers enumerated above.

(4) During the time that the child is at work, the employer must provide suitable seats, and permit their use so far as the nature of the work allows; and must

(5) post and keep posted in a conspicuous place, the hours for beginning work in the morning, and for stopping work in the middle of the day; the hours for resuming work and for stopping at the close of the day; and all work done at any time not specified in such posted notice constitutes a violation of the law. The total number of hours must not exceed eight in any one day or forty-eight in one week.

THE OFFICIALS

Effective legislation for the protection of children requires that the officials entrusted with the duty of enforcing it

(1) give their whole time, not less than eight hours of every working day, to the performance of their duties, making night inspections whenever this may be necessary to insure that children are not working during the prohibited hours; and

(2) treat all employers alike, irrespective of political considerations, of race, religion or power in a community;

(3) prosecute all violations of the law;

(4) publish annual reports full, clear and printed promptly for general use and as a basis for legislation. The quarterly bulletin issued by some states is a valuable register of efficiency and means of education for the public.

THE SCHOOL

The best child labor law is a compulsory education law covering forty weeks of the year and requiring the consecutive attendance of all the children to the age of fourteen years, and until sixteen years, unless they have meanwhile completed a specified portion of the curriculum, as preferably eight years. It is never certain that children are not at work, if they are out of school. In order to keep the children, however, it is not enough to compel attendance—the schools must be modified and adapted to the needs of the recent immigrants in the North and of the poor whites in the South, affording instruction which appeals to the parents as worth having, in lieu of the wages which the children are forbidden to earn, and appeals to the children as interesting and attractive. No child labor legislation can be regarded as effective which does not deal with these facts.

The vacation school and camp promise reinforcement of the child labor laws, which are now seriously weakened by the fact that the long vacation leaves idle upon the streets children whom employers covet by reason of the low price of their labor, while parents, greedy for the children's earnings and anxious lest the children suffer from the life of the streets, eagerly seek work for them. Nothing could be worse for the physique of the school child than being compelled to work during the summer; and the development of the vacation school and vacation camp alone seems to promise a satisfactory solution of the problem of the vacation of the city child of the working class.

THE COMMUNITY

Effective child labor legislation places upon the community many duties, among which are

(1) maintaining officials—men and women—school-attendance officers, health officers, and factory inspectors, all of whom need
    (*a*) salary and traveling expenses,
    (*b*) access at all reasonable times to the places where children are employed,
    (*c*) power to prosecute all violations of the statutes affecting working children,
    (*d*) tenure of office so effectively assured that they need not fear removal from office in consequence of prosecuting powerful offenders;
(2) imposing penalties so reasonable in relation to the nature of the offense and the ability of the offender as to appeal to the sense of justice of officers concerned and make the work of enforcement not unduly difficult;
(3) maintaining schools in which to educate the children who are prohibited from working;
(4) maintaining vital statistics, especially birth records, such that the real age of native children may be readily ascertained;
(5) maintaining provision for the adequate relief of dependent families in which the children are not yet of legal age for beginning work.

More important, however, than the enactment of the foregoing provisions is the maintenance in the community of a persistent, lively interest in the enforcement of the child labor statutes. Without such interest, judges do not enforce penalties against offending parents and employers; inspectors become discouraged and demoralized; or faithful officers are removed because they have no organized backing, while some group of powerful industries clamors that the law is injuring its interest. Well-meaning employers grow careless, infractions become the rule, and workingmen form the habit of thinking that laws inimical to their interest are enforced, while those framed in their interest are broken with impunity.

Upon parents there presses incessant poverty, urging them to seek opportunities for wage-earning, even for the youngest children; and upon the employers presses incessant competition, urging them to reduce the pay-roll by all means, fair and foul. No law enforces itself; and no officials can enforce a law which depends upon them alone. It is only when they are consciously the agents of the will of the people that they can make the law really protect the children effectively.

A STANDARD CHILD LABOR LAW

The best provisions of the law of Illinois, Massachusetts, New York, Ohio and Wisconsin have been included in the Standard Child Labor Law which follows:

Be it Enacted, etc., as follows:

Compiled from New York Factory and Mercantile Establishments Laws, and Ohio Law.

Child Under 14 Years.

Sec. 1. No child under fourteen years of age shall be employed, permitted or suffered to work in, or in connection with, any factory, workshop, mercantile establishment, store, business office, telegraph or telephone office, restaurant, bakery, hotel, apartment house or in the distribution or transmission of merchandise or messages. It shall be unlawful for any person, firm or corporation to employ any child under fourteen years of age in any business or service whatever, during any part of the term during which the public schools of the district in which the child resides are in session.

New York Compulsory Education Law, Sec. 5.

Child Under 16 Years.

Compiled from Massachusetts Law and New York Factory Law.

Sec. 2 No child between fourteen and sixteen years of age shall be employed, permitted or suffered to work in any factory, workshop or mercantile establishment unless the person or corporation employing him procures and keeps on file and accessible to the truant officers of the town or city, and to the inspectors of factories, an employment certificate as hereinafter prescribed, and keeps two complete lists of all such children employed therein, one on file and one conspicuously posted near the principal entrance of the building in which such children are employed. On termination of the employment of a child so registered, and whose certificate is so filed, such certificate shall be forthwith surrendered by the employer to the child or its parent or guardian or custodian. The inspector of factories may make demand on an employer in whose factory a child apparently under the age of sixteen years is employed or permitted or suffered to work, and whose employment certificate is not then filed as required by this article, that such employer shall either furnish him within ten days, evidence satisfactory to him that such child is in fact over sixteen years of age, or shall cease to employ or permit or suffer such child to work in such factory. The inspector of factories may require from such employer the same evidence of age of such child as is required on the issuance of an employment certificate; and the employer furnishing such evidence shall not be required to furnish any further evidence of the age of the child. In case such employer shall fail to produce and deliver to the inspector of factories *within* ten days after such demand such evidence of age herein required by him, and shall thereafter continue to employ such child or permit or suffer such child to work in such factory, proof of the giving of such notice and of such failure to produce and file such evidence shall be prima facie evidence in any prosecution brought for a violation of this article that such child is under sixteen years of age and is unlawfully employed.

Child Apparently Under 16 Years.

New York Factory Law.

Massachusetts Law.

Employment Certificate by Whom Approved.

Sec. 3. An employment certificate shall be approved only by the superindent of schools or by a person authorized by him in writing, or, where there is no superintendent of schools, by a person authorized by the school committee; provided that no member of a school committee or other person authorized as aforesaid shall have authority to approve such certificate for any child then in or about to enter his own employment, or the employment of a firm or corporation of which he is a member, officer or employee.

Compiled from New York Factory Law, Ch. 184, and Oregon Factory Law.

Employment Certificate.

Sec. 4 The person authorized to issue employment certificate shall not issue such certificate until he has received, examined, approved and filed the following papers duly executed: (1) The school record of such child properly filled out and signed as provided in this article. (2) A passport or duly attested transcript of the certificate of birth or baptism or other religious record, showing the date and place of birth of such child. A duly attested transcript of the birth certificate filed according to law with a registrar of vital statistics, or other officer charged with the duty of recording births, shall be conclusive evidence of the age of such child. (3) The affidavit of the parent or guardian or custodian of a child, which shall be required, however, only in case such last mentioned transcript of the certificate of birth be not produced and filed, showing the place and date of birth of such child; which affidavit must be taken before the officer issuing the employment certificate, who is hereby authorized and required to administer such oath, and who shall not demand or receive a fee therefor. Such employment certificate shall not be issued until such child further has personally appeared before and been examined by the officer issuing the certificate, and until such officer shall, after making such examination, sign and file in his office a statement that the child can read and legibly write simple sentences in the English language and that in his opinion the child is fourteen years of age or upwards and has reached the normal development of a child of its age, and is in sound health and is physically able to perform the work which it intends to do. In doubtful cases such physical fitness shall be determined by a medical officer of the board or department of health. Every such employment certificate shall be signed, in the presence of the officer issuing the same, by the child in whose name it is issued.

Contents of Certificate.

Sec. 5. Such certificate shall state the date and place of birth of the child, and describe the color of the hair and eyes, the height and weight and any distinguishing facial marks of such child, and that the papers required by the preceding section have been duly examined, approved and filed and that the child named in such certificate has appeared before the officer signing the certificate and been examined.

School Record, What to Contain.

Sec. 6. The school record required by this article shall be signed by the principal or chief executive officer of the school which such child has attended and shall be furnished, on demand, to a child entitled thereto. It shall contain a statement certifying that the child has regularly attended the public schools or schools equivalent thereto or parochial schools for not less than one hundred and sixty days during the school year previous to his arriving at the age of fourteen years or during the year previous to applying for such school record and is able to read and write simple sentences in the English language, and has received during such period instruction in reading, spelling, writing, English grammar and geography and is familiar with the fundamental operations of arithmetic up to and including fractions. Such school record shall also give the age and residence of the child as shown on the records of the school and the name of its parent or guardian or custodian.

Report of Certificates Issued.

Sec. 7. The local board of education or the school committee of a city, village or town, shall transmit, between the first and tenth day of each month, to the office of the factory inspector, a list of the names of the children to whom certificates have been issued.

Compiled from Ohio and New York Factory Law.

Hours of Labor.

Sec. 8. No boy under the age of sixteen years and no girl under the age of eighteen years shall be employed, suffered or permitted to work at any gainful occupation more than forty-eight hours in any one week, nor more than eight hours in any one day; or before the hour of seven o'clock in the morning or after the hour of five o'clock in the evening.

Any child working in or in connection with any of the aforesaid establishments, or in the distribution or transmission of merchandise or messages, who refuses to give to the inspector his or her name, age and place of residence, shall be forthwith conducted by the inspector to the office of the judge of the juvenile or probate court for examination. Every employer shall post in a conspicuous place in every room where such minors are employed a printed notice stating the hours required of them each day of the week, the hours of commencing and stopping work and the hours when the time or times allowed for dinner or for other meals begin and end. The printed form of such notice shall be furnished by the State Inspector of Factories, and the employment of any minor for longer time in any day so stated shall be deemed a violation of this section.

Compiled from Massachusetts Law.

Failure to Produce Certificate.

Sec. 9. Whoever employs a child under sixteen years of age, and whoever having under his control a child under such age permits such child to be employed in violation of sections one, two, or eight of this act, shall, for such offense, be fined not more than fifty dollars; and whoever continues to employ any child in violation of either of said sections of this act after being notified by a truant officer or an inspector of factories thereof, shall for every day thereafter that such employment continues, be fined not less than five nor more than twenty dollars. A failure to produce to a truant officer or inspector of factories any employment certificate or list required by this act shall be prima facie evidence of the illegal employment of any person whose employment certificate is not produced or whose name is not so listed. Any corporation or employer retaining employment certificates in violation of section five of this act shall be fined ten dollars. Every person authorized to sign the certificate prescribed by section five of this act who knowingly certifies to any materially false statement therein shall be fined not more than fifty dollars.

Truant Officers to Inspect Work Places.

Sec. 10. Truant officers may visit the factories, workshops and mercantile establishments in their several towns and cities and ascertain whether any minors are employed therein contrary to the provisions of this act, and they shall report any cases of such illegal employment to the school committee and to the inspector of factories. Inspectors of factories and truant officers may require that the employment certificates and lists provided for in this act, of minors employed in such factories, workshops or mercantile establishments, shall be produced for their inspection. Complaints for offenses under this act shall be brought by inspectors of factories.

Compiled from Ohio and Wisconsin Laws.

Employments Forbidden Children Under 16 Years of Age

Sec. 11. No child under the age of sixteen years shall be employed, permitted or suffered to work at any of the following occupations: Sewing machine belts, in any workshop or factory or assisting in sewing machine belts in any workshop or factory in any capacity whatever; adjusting any belt to any machinery; oiling, or assisting in oiling, wiping or cleaning machinery; operating, or assisting in operating, circular or band saws, wood-shapers, wood-jointers, planers, sand-paper or wood-polishing machinery; picker machine, or machines used in picking wool, cotton, hair or any upholstering material; paper-lacing machines, leather-burnishing machines, burnishing machines in any tannery or leather manufactory; job or cylinder printing presses operated by power other than foot; emery or polishing wheels used for polishing metal; wood-turning or boring machinery; stamping machines used in sheet metal and tinware manufacturing; stamping machines in washer and nut factories; corrugating rolls, such as are used in roofing and washboard factories; steam boilers, steam machinery, or other steam generating apparatus; dough brakes or cracker machinery of any description; wire or iron straightening machinery; rolling mill machinery, punches or shears; washing, grinding or mixing mills; calender rolls in rubber manufacturing; laundering machinery; passenger or freight elevators; nor in any capacity in preparing any composition in which dangerous or poisonous acids are used; manufacture of paints, colors or white lead; dipping, dyeing or packing matches; manufacturing, packing, or storing powder, dynamite, nitro-glycerine, compounds, fuses or other explosives; manufacture of goods for immoral purposes; nor in any tobacco warehouse, cigar or other factory where tobacco is manufactured or prepared; nor as pin-boys in bowling alleys; nor in or about any distillery, brewery, or any other establishment where malt or alcoholic liquors are manufactured, packed, wrapped or bottled; nor in any hotel, theater, concert hall, drug store, saloon, or place of amusement wherein intoxicating liquors are sold; nor in any other employment that may be considered dangerous to their lives and limbs, or where their health may be injured or morals depraved; nor shall females under the age of sixteen years be employed in any capacity where such employment compels them to remain standing constantly.

AN ACT TO PROVIDE FOR THE PUNISHMENT OF PERSONS RESPONSIBLE FOR OR CONTRIBUTING TO THE DELINQUENCY OF CHILDREN

This valuable law, known as the Adult Delinquency Law, is of particular importance for children working in street trades, for messengers and delivery boys and children whose work may bring them into immoral or dangerous surroundings. Under its provisions, for example, the saloonkeeper who sells liquors to a minor as well as the parent or employer who sends the child to a saloon, are liable as contributors to his guilt.

Section I. In all cases where any child shall be a delinquent child or a juvenile delinquent person, as defined by the statute of this state, the parent or parents, legal guardian, or person having the custody of such child, or any other person, responsible for, or by any act encouraging, causing or contributing to the delinquency of such child, shall be guilty of a misdemeanor, and upon trial and conviction thereof shall be fined in a sum not to exceed one thousand dollars ($1,000), or imprisoned in the county jail for a period not exceeding one (1) year, or by both such fine and imprisonment. The court may impose conditions upon any person found guilty under this act, and so long as such person shall comply therewith to the satisfaction of the court the sentence imposed may be suspended.

Various cities throughout the country—such as Hartford, Conn., Portland, Me., Detroit, Mich., etc.—have ordinances regarding the work of children in street trades, but none of them appear so worded or so enforced as to be of any value. Massachusetts and New York alone have state laws regulating the work of newsboys, which are at least capable of enforcement.

The dangers of street trades for young boys have been ignored until within the last few years. Among the physical and moral injuries which these trades entail if unregulated, the worst are: 1. Irregularity of sleep and meals; 2. Encouragement to truancy and defiance of parental control; 3. Nightwork; 4. Introduction to many vices on the street.

In every city these conditions prevail unchecked, to a greater or less degree. In the absence of a more effective law, the Newsboy Law of New York is printed in full, with a brief statement of the provisions in which it is excelled by the Massachusetts law. As the act of selling on the streets out of school hours, is a privilege which should be granted to school boys in good standing, the enforcement of the law should necessarily be entrusted to the school authorities.

LAWS OF NEW YORK

AN ACT to amend the labor law relating to children working in streets and public places in cities of the first class and second.

Became a law, July 16, 1907, with the approval of the Governor.

§ 174. **Prohibited employment of children in street trades.**—No male child under ten, and no girl under sixteen years of age shall, in any city of the first or second class, sell or expose or offer for sale newspapers, magazines or periodicals in any street or public place.

§ 175. **Permit and badge for newsboys, how issued.** No male child under fourteen years of age shall sell or expose or offer for sale said articles unless a permit and badge as hereinafter provided shall have been issued to him by the district superintendent of the board of education of the city and school district where said child resides, or by such other officer thereof as may be officially designated by such board for that purpose, on the application of the parent, guardian or other person having the custody of the child desiring such permit and badge, or in case said child has no parent, guardian or custodian, then on the application of his next friend, being an adult. Such permit and badge shall not be issued until the officer issuing the same shall have received, examined, approved and placed on file in his office satisfactory proof that such male child is of the age of ten years or upwards, and shall also have received, examined and placed on file the written statement of the principal or chief executive officer of the school which the child is attending, stating that such child is an attendant at such school, that he is of the normal development of a child of his age and physically fit for such employment, and that said principal or chief executive officer approves the granting of a permit and badge to such child. No such permit or badge shall be valid for any purpose except during the period in which such proof and written statement shall remain on file, nor shall such permit or badge be authority beyond the period fixed therein for its duration. After having received, examined, and placed on file such papers the officer shall issue to the child a permit and badge. Principals or chief executive officers of schools in which children under fourteen years are pupils shall keep complete lists of all children in their schools to whom a permit and badge as herein provided have been granted.

§ 176. **Contents of permit and badge.**—Such permit shall state the date and place of birth of the child, the name and address of its parent, guardian, custodian or next friend as the case may be, and describe the color of hair and eyes, the height and weight and any distinguishing facial mark of such child, and shall further state that the papers required by the preceding section have been duly examined and filed; and that the child named in such permit has appeared before the officer issuing the permit. The badge furnished by the officer issuing the permit shall bear on its face a number corresponding to the number of the permit, and the name of the child. Every such permit, and every such badge on its reverse side, shall be signed in the presence of the officer issuing the same by the child in whose name it is issued.

§ 177. **Regulations concerning badge and permit.**—The badge provided for herein shall be worn conspicuously at all times by such child while so working; and all such permits and badges shall expire annually on the first day of January. The color of the badge shall be changed each year. No child to whom such permit and badge are issued shall transfer the same to any other person nor be engaged in any city of the first or second class as a newsboy, or shall sell or expose or offer for sale newspapers, magazines or periodicals in any street or public place without having conspicuously upon his person such badge, and he shall exhibit the same upon demand at any time to any police, or attendance officer.

§ 178. **Limit of hours.**—No child to whom a permit and badge are issued as provided for in the preceding sections shall sell or expose or offer for sale any newspapers, magazines or periodicals after ten o'clock in the evening, or before six o'clock in the morning.

§ 179. **Enforcement of article.**—In cities of the first or second class, police officers, and the regular attendance officers appointed by the board of education who are hereby vested with the powers of peace officers for the purpose, shall enforce the provisions of this article.

§ 179-a. **Violation of this article, how punished.**—Any child who shall work in any city of the first or second class in any street or public place as a newsboy or who shall sell or expose or offer for sale newspapers, magazines or periodicals in violation of the provisions of this article, shall be arrested and brought before a court or magistrate having jurisdiction to commit a child to an incorporated charitable reformatory or other institution and be dealt with according to law; and if any such child is committed to an institution, it shall, when practicable, be committed to an institution governed by persons of the same religious faith as the parents of such child. The permit and badge of any child who violates the provisions of this article may be revoked by the officer issuing the same, upon the recommendation of the principal or chief executive officer of the school which such child is attending, or upon the complaint of any police officer or attendance officer, and such child shall surrender the permit and badge so revoked upon the demand of any attendance officer or police officer charged with the duty of enforcing the provisions of this article. The refusal of any child to surrender such permit and badge, upon such demand, or the sale or offering for sale of newspapers, magazines or periodicals in any street or public place by any child after notice of the revocation of such permit and badge shall be deemed a violation of this article and shall subject the child to the penalties provided for in this section.

§ 2. Nothing in this act shall be deemed or construed to repeal, amend, modify, impair or in any manner affect any provision of the penal code or the code of criminal procedure.

§ 3. This act shall take effect October first, nineteen hundred and seven.

ADDITIONAL PROVISIONS IN FORCE IN MASSACHUSETTS

The following provisions of the Massachusetts law excel the New York law and should be incorporated in any statute hereafter adopted:

No child shall work as a bootblack unless he is over ten years of age; and he shall not sell any other article except newspapers, unless he is over twelve years of age.

Every permit shall be issued on the condition that the holder thereof shall, so long as he continues under the age of fourteen years, attend, during every session thereof, one of the public schools, or some regularly established school in the city of Boston, approved by the committee on licenses of said city.

Any minor who violates any of said terms will be deprived of his permit and badge, and be fined.

A BILL TO PREVENT THE EMPLOYMENT OF CHILDREN IN FACTORIES OR MINES

This bill, known as the Beveridge Child Labor Bill, marks the first attempt to cope with child labor throughout the country by the Federal Government. It is meant to fill the urgent need for uniformity of child labor laws in all the states, a uniformity hitherto not even approximated by separate efforts of the individual states as this Handbook illustrates. This bill, if enacted into law, will set a minimum standard below which the nation does not permit any of the states to fall.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That six months from and after the passage of this act no carrier of interstate commerce shall transport or accept for transportation the products of any factory or mine in which children under fourteen years of age are employed or permitted to work, which products are offered to said interstate carrier by the firm, person, or corporation owning or operating said factory or mine, or any officer or agent or servant thereof, for transportation into any other state or territory than the one in which said factory is located.

Sec. 2. That no carrier of interstate commerce shall transport or accept for transportation the products of any factory or mine offered it for transportation by any person, firm, or corporation which owns or operates such factory or mine, or any officer, agent, or servant of such person, firm, or corporation, until the president or secretary or general manager of such corporation or a member of such firm or the person owning or operating such factory or mine shall file with said carrier an affidavit to the effect that children under fourteen years of age are not employed in such factory or mine.

Sec. 3. That the form of said affidavit shall be prescribed by the Secretary of the Department of Commerce and Labor. After the first affidavit is filed a like affidavit shall be filed, on or before July first and on or before December thirty-first of each year, with the interstate carrier to which such factory or mine offers its products for transportation; and after the first affidavit subsequent affidavits shall also state that no children under fourteen years of age are employed or permitted to work in said factory or mine or have been employed or permitted to work in said factory or mine at any time during the preceding six months.

Sec. 4. That any officer or agent of a carrier of interstate commerce who is a party to any violation of this act or who knowingly violates any of the provisions of this act shall be punished for each offense by a fine of not more than ten thousand dollars nor less than one thousand dollars or by imprisonment for not more than six months nor less than one month or by both said fine and imprisonment, in the discretion of the court. Any person by this act required to file the affidavit herein provided for who fails or refuses to file such affidavit or who shall make a false statement in said affidavit. shall be punished by a fine not exceeding twenty thousand dollars nor less than five thousand dollars or by imprisonment not exceeding one year nor less than three months, or by both said fine and imprisonment, in the discretion of the court.

A BILL TO REGULATE THE EMPLOYMENT OF CHILD LABOR IN THE DISTRICT OF COLUMBIA

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no child under fourteen years of age shall be employed, permitted, or suffered to work in the District of Columbia in any factory, workshop, mercantile establishment, store, business office, telegraph office, restaurant, hotel, apartment house, theatre, bowling alley, or in the distribution or transmission of merchandise or messages. No such child shall be employed in any work performed for wages or other compensation, to whomsoever payable, during the hours when the public schools of the District of Columbia are in session, nor before the hour of six o'clock in the morning or after the hour of seven o'clock in the evening.

Sec. 2. That no child under sixteen years of age shall be employed, permitted, or suffered to work in the District of Columbia in any of the establishments named in section one unless the person or corporation employing him procures and keeps on file and accessible to the inspectors authorized by this act and the truant officers of the District of Columbia an age and schooling certificate, and keeps two complete lists of all such children employed therein, one on file and one conspicuously posted near the principal entrance of the building in which such children are employed.

Sec. 3. That an age and schooling certificate shall be approved only by the superintendent of public schools, or by a person authorized by him in writing, who shall have authority to administer the oath provided for therein, but no fee shall be charged therefor.

Sec. 4. That an age and schooling certificate shall not be approved unless satisfactory evidence is furnished by duly attested transcript of the certificate of birth or baptism of such child, or other religious record, or the register of birth or the affidavit of the parent or guardian or custodian of a child, which affidavit shall be required, however, only in case such last-mentioned transcript of the certificate of birth be not procured and filed, showing the place and date of birth of such child, which affidavit must be taken before the officer issuing the employment certificate, who is hereby authorized and required to administer such oath, and who shall not demand or receive a fee therefor.

Sec. 5. That the age and schooling certificate of a child under sixteen years of age shall be in the following form:

AGE AND SCHOOLING CERTIFICATE

This certifies that I am the (father, mother, guardian, or custodian) of (name of child)............................and that (he or she) was born at (name of town or city).....................,in the county of (name of county, if known)......................and State (or country) of..............on the (day and year of birth)...............and is now (number of years and months)....................old.

(Signature of father, mother, guardian, or custodian).

(Date)

There personally appeared before me the above-named (name of person signing)...................................and made oath that the foregoing certificate by (him or her) signed is true to the best of (his or her) knowledge and belief. I hereby approve the foregoing certificate of (name of child)........ ....; height (feet and inches)..............; eyes (color)........; complexion (fair or dark)............; hair (color)........, having no sufficient reason to doubt that (he or she) is of the age therein certified. I hereby certify that (he or she) can read at sight and can write legibly simple sentences in the English language, and that (he or she) has reached the normal development of a child of (his or her) age, and is in sound health and is physically able to perform the work which (he or she) intends to do, and that (he or she) has regularly attended the public schools, or a school equivalent thereto, for not less than one hundred and thirty days during the school year previous to arriving at the age of fourteen years, or during the year previous to applying for such school record, and has received during such period instruction in reading, spelling, writing, English grammar, and geography, and is familiar with the fundamental operations of arithmetic, to and including fractions.

This certificate belongs to (name of child in whose behalf it is drawn) ...., and is to be surrendered to (him or her) whenever (he or she) leaves the services of the corporation or employer holding the same; but if not claimed by said child within thirty days from such time, it shall be returned to the superintendent of schools.

(Signature of person authorized to approve and sign, with official character or authority.)

(Date)

A duplicate of each age and schooling certificate shall be filled out and kept on file by the superintendent of public schools. Any explanatory matter may be printed with such certificate, in the discretion of said superintendent.

Sec. 6. That whoever employs a child under sixteen years of age, and whoever, having under his control a child under such age, permits such child to be employed in violation of sections one, two, eight, or nine of this act shall, for such offense, be fined not more than fifty dollars; and whoever continues to employ any child in violation of any of said sections of this act, after being notified by an inspector authorized by this act or a truant officer of the District of Columbia, shall for every day thereafter that such employment continues be fined not less than five dollars nor more than twenty dollars. A failure to produce to an inspector authorized by this act or a truant officer of the District of Columbia any age or schooling certificate or list required by this act shall be prima facie evidence of illegal employment of any person whose age and schooling certificate is not produced or whose name is not listed. Any corporation or employer retaining any age and schooling certificate in violation of section five of this act shall be fined ten dollars. Every person authorized to sign the certificate prescribed by section five of this act who knowingly certifies to any materially false statement therein shall be fined not more than fifty dollars.

Sec. 7. That inspectors authorized by this act and the truant officers of the District of Columbia may visit the establishments named in section one and ascertain whether any minors are employed therein contrary to the provisions of this act, and they shall report any cases of such illegal employment to the superintendent of public schools and the corporation counsel of the District of Columbia. Inspectors authorized by this act and the truant officers of the District of Columbia may require that the age and schooling certificates and lists provided for in this act of minors employed in the establishments named in section one shall be produced for their inspection.

Sec. 8. That no minor under sixteen years of age shall be employed, permitted, or suffered to work in any of the establishments named in section one more than eight hours in any one day, or before the hour of six o'clock ante-meridian or after the hour of seven o'clock post-meridian, and in no case shall the number of hours exceed forty-eight in a week.

Sec. 9. That every employer shall post in a conspicuous place in every room where such persons are employed a printed notice, stating the number of hours required of them on each day of the week, the hours of commencing and stopping work, and the hours when the time or times allowed for dinner or for other meals begin and end. The printed form of such notice shall be furnished by the inspectors authorized by this act and the truant officers of the District of Columbia, and the employment of any such person for a longer time in any day than that so stated shall be deemed a violation of this section.

Sec. 10. That the Commissioners of the District of Columbia are hereby authorized to appoint two inspectors to carry out the purposes of this act, at a compensation not exceeding one thousand two hundred dollars each per annum.

Sec. 11. That the juvenile court of the District of Columbia is hereby given jurisdiction in all cases arising under this Act.

UNITED STATES CENSUS, 1900

(Population, Vol. II, Part II, Table 65—p. 422.)

The following tables exhibit the actual numbers, not percentages, of illiterate children between the ages of ten and fourteen years in each state in 1900. In the official table the states are arranged alphabetically, and this is here reproduced in the left column.

For readier comparison the writer has compiled an additional table identical with that except that, instead of the alphabetical arrangement, the states are placed in the order of the literacy of the children, those states being grouped at the bottom of the scale which haver the largest number of illiterate children, and those at the top which have the least number of illiterate children of the age under consideration. For greater convenience, the table is divided by horizontal lines into four groups of thirteen states each.

ILLITERATE CHILDREN 10 TO 14 YEARS IN EACH STATE.

Alabama	66,072
Alaska	1,903
Arizona	2,592
Arkansas	26,972
California	1,279
Colorado	742
Connecticut	436
Delaware	845
District of Columbia	398
Florida	8,389
Georgia	63,329
Hawaii	394
Idaho	209
Illinois	4,044
Indiana	1,454
Indian Territory	12,172
Iowa	883
Kansas	878
Kentucky	21,247
Louisiana	55,601
Maine	1,255
Maryland	5,850
Massachusetts	1,547
Michigan	1,744
Minnesota	1,365
Mississippi	44,334
Missouri	11,660
Montana	374
Nebraska	412
Nevada	275
New Hampshire	557
New Jersey	2,060
New Mexico	4,354
New York	4,740
North Carolina	51,100
North Dakota	836
Ohio	2,048
Oklahoma	1,205
Oregon	175
Pennsylvania	6,326
Rhode Island	601
South Carolina	51,536
South Dakota	472
Tennessee	36,375
Texas	35,401
Utah	220
Vermont	287
Virginia	34,612
Washington	340
West Virginia	5,810
Wisconsin	1,688
Wyoming	72
The United States	570,047

1.	Wyoming	72
2.	Oregon	175
3.	Idaho	209
4.	Utah	220
5.	Nevada	275
6.	Vermont	287
7.	Washington	340
8.	Montana	374
9.	Hawaii	394
10.	District of Columbia	398
11.	Nebraska	412
12.	Connecticut	436
13.	South Dakota	472
14.	New Hampshire	557
15.	Rhode Island	691
16.	Colorado	742
17.	North Dakota	836
18.	Delaware	845
19.	Kansas	878
20.	Iowa	883
21.	Maine	1,255
22.	California	1,279
23.	Oklahoma	1,295
24.	Minnesota	1,365
25.	Indiana	1,453
26.	Massachusetts	1,547
27.	Wisconsin	1,688
28.	Michigan	1,744
29.	Alaska	1,903
30.	Ohio	2,048
31.	New Jersey	2,060
32.	Arizona	2,502
33.	Illinois	2,044
34.	New Mexico	4,354
35.	New York	4,740
36.	West Virginia	5,810
37.	Maryland	5,850
38.	Pennsylvania	6,326
39.	Florida	8,389
40.	Missouri	11,660
41.	Indian Territory	12,172
42.	Kentucky	21,247
43.	Arkansas	26,072
44.	Virginia	34,612
45.	Texas	35,491
46.	Tennessee	36,375
47.	Mississippi	44,334
48.	North Carolina	51,100
49.	South Carolina	51,536
50.	Louisiana	55,601
51.	Georgia	63,320
52.	Alabama	66,072
	The United States	579,047

OUR NATIONAL INLAND WATERWAYS POLICY[1]

Under any circumstances I should welcome the chance of speaking at Memphis in the old historic State of Tennessee, rich in its glorious past and in the certainty of an even greater future; but I especially congratulate myself that I am able to speak here on an occasion like this, when I meet not only the citizens of Tennessee, but many of the citizens of Mississippi and Arkansas and of other states as well; and when the chief executives of so many states are gathered to consider a subject of momentous interest to all. The Mississippi Valley is a magnificent empire in size and fertility. It is better adapted to the development of inland navigation than any other valley in either hemisphere; for there are 12,000 miles of waterway now more or less fully navigable, and the conditions are so favorable that it will be easy to increase the extent of navigable waterways to almost any required degree by canalization. Early in our industrial history this valley was the seat of the largest development of inland navigation in the United States, and perhaps you will pardon my mentioning that the first steamboat west of the Alleghenies was built by a Roosevelt, my great-grandfather's brother, in 1811, for the New Orleans trade, and in that year made the trip from Pittsburg to New Orleans. But from various causes river and canal transportation declined all over the United States as the railroad systems came to their full development. It is our business to see that the decline is not permanent; and it is of interest to remember that nearly a century ago President Madison advocated the canalization of the Mississippi.

In wealth of natural resources no kingdom of Europe can compare with the Mississippi Valley and the region around the Great Lakes, taken together, and in population this huge fertile plain already surpasses all save one or two of the largest European kingdoms. In this empire a peculiarly stalwart and masterful people finds itself in the surroundings best fitted for the full development of its powers and faculties. There has been a great growth of manufacturing centers in the valley; the movement is good if it does not go too far; but I most earnestly hope that this region as a whole will remain predominantly agricultural. The people who live in the country districts, and who till the small or medium-sized farms on which they live, make up what is on the whole the most valuable asset in our national life. There can be just as real progress and culture in the country as in the city; especially in these days of rural free delivery, trolleys, bicycles, telephones, good roads, and school improvements. The valley of the Mississippi is politically and commercially more important than any other valley on the face of the globe. Here more than anywhere else will be determined the future of the United States and indeed of the whole western world; and the type of civilization reached in this mighty valley, in this vast stretch of country lying between the Alleghenies and the Rockies, the Great Lakes and the Gulf, will largely fix the type of civilization for the whole Western Hemisphere. Already, as our history shows, the West has determined our national political development, and the fundamental principle of present American politics, political equality, was originally a western idea.

---

[1] From address delivered by President Roosevelt to the Deep Waterway Convention at Memphis, Tenn., October 4, 1907.

The wonderful variety of resources in different portions of the valley makes the demand for transportation altogether exceptional. Coal, lumber, corn, wheat, cotton, cattle—on the surface of the soil and beneath the soil the riches are great. There are already evident strong tendencies to increase the carrying of freight from the northern part of the valley to the Gulf. Throughout the valley the land is so fertile as to make the field for the farmer peculiarly attractive; and where in the west the climate becomes dryer we enter upon the ranching country; while in addition to the products of the soil there are also the manufactures supplied in innumerable manufacturing centers, great and small. Cities of astonishing growth are found everywhere from the Gulf to the Great Lakes, from the Alleghenies to the Rockies; most of them being situated on the great river which flows by your doors or upon some of its numerous navigable tributaries. New mineral fields are discovered every year; and the constantly increasing use of all the devices of intensive cultivation steadily adds to the productive power of the farms. Above all, the average man is honest, intelligent, self-reliant, and orderly, and therefore a good citizen; and farmer and wageworker alike—in the last analysis the two most important men in the community—enjoy a standard of living, and have developed a standard of self-respecting, self-reliant manhood, which are of good augury for the future of the entire Republic. No man can foresee the limit of the possibility of development in the Mississippi Valley.

Such being the case, and this valley being literally the heart of the United States, all that concerns its welfare must concern likewise the whole country. Therefore, the Mississippi River and its tributaries ought by all means to be utilized to their utmost possibility. Facility of cheap transportation is an essential in our modern civilization, and we cannot afford any longer to neglect the great highways which nature has provided for us. These natural highways, the waterways, can never be monopolized by any corporation. They belong to all the people, and it is in the power of no one to take them away. Wherever a navigable river runs beside railroads the problem of regulating the rates on the railroads becomes far easier, because river regulation is rate regulation. When the water rate sinks, the land rate cannot be kept at an excessive height. Therefore it is of national importance to develop these streams as highways to the fullest extent which is genuinely profitable. Year by year transportation problems become more acute, and the time has come when the rivers really fit to serve as arteries of trade should be provided with channels deep enough and wide enough to make the investment of the necessary money profitable to the public. The National Government should undertake this work. Where the immediately abutting land is markedly benefited, and this benefit can be definitely localized, I trust that there will be careful investigation to see whether some way can be devised by which the immediate beneficiaries may pay a portion of the expenses—as is now the custom as regards certain classes of improvements in our municipalities; and measures should be taken to secure from the localities specially benefited proper terminal facilities. The expense to the Nation of entering upon such a scheme of river improvement as that which I believe it should undertake, will necessarily be great. Many cautious and conservative people will look askance upon the project, and from every standpoint it is necessary, if we wish to make it successful, that we should enter upon it only under conditions which will guarantee the Nation against waste of its money, and which will insure us against entering upon any project until after the most elaborate expert examination, and reliable calculation of the proportion between cost and benefit. In any project like this there should be a definite policy, and a resolute purpose to keep in mind that the only improvements made should be those really national in their character. We should act on the same principle in improving our rivers that we should follow in improving our harbors. The great harbors are of consequence not merely to the immediate localities, but to immense stretches of country; and the same is true of the great rivers. It is these great rivers and great harbors the improvement of which is of primary national interest. The main streams should be improved to the highest practical degree of efficiency before improvements are attempted on the branches, and work should be undertaken only when completion is in sight within a reasonable time, so that assured results may be gained and the communities affected depend upon the improvements. Moreover, as an incident in caring for the river so that it may become an efficient channel of transportation, the United States Government should do its full part in levee building, which, in the lower reaches of the river, will not only give a channel for commerce, but will also give protection to the adjacent bottom lands.

Immense sums have already been spent upon the Mississippi by the States and the Nation, yet much of it remains practically unused for commerce. The reasons for this fact are many. One is that the work done by the National Government at least has not been based upon a definite and continuous plan. Appropriations by Congress, instead of assuring the steady progress and timely completion of each piece of work as it was undertaken, have been irregular and uncertain. As a direct consequence, far-reaching plans have been discouraged and continuity in execution has been made impossible. It is altogether unlikely that better results will be obtained so long as the method is followed of making partial appropriations at irregular intervals for works which should never be undertaken until it is certain that they can be carried to completion within a definite and reasonable time. Planned and orderly development is essential to the best use of every natural resource, and to none more than to the best use of our inland waterways. In the case of the waterways it has been conspicuously absent. Because such foresight was lacking, the interests of our rivers have been in fact overlooked, in spite of the immense sums spent upon them. It is evident that their most urgent need is a farsighted and comprehensive plan, dealing not with navigation alone, nor with irrigation alone, but considering our inland waterways as a whole, and with reference to every use to which they can be put. The central motive of such a plan should be to get from the streams of the United States not only the fullest but also the most permanent service they are capable of rendering to the Nation as a whole.

The industries developed under the stimulus of the railroads are for the most part permanent industries, and therefore they form the basis for future development. But the railroads have shown that they alone cannot meet the demands of the country for transportation, and where this is true the rivers should begin to supplement the railroads, to the benefit of both, by relieving them of certain of the less profitable classes of freight. The more farseeing railroad men, I am glad to tell you, realize this fact, and many of them have become earnest advocates of the improvement of the Mississippi, so that it may become a sort of inland seaboard, extending from the Gulf far into the interior, and I hope ultimately to the Great Lakes. An investigation of the proposed Lakes-to-the-Gulf deep waterway is now in progress under an appropriation of the last Congress. We shall await its results with the keenest interest. The decision is obviously of capital importance to our internal development and scarcely less so in relation to external commerce.

This is but one of the many projects which it is time to consider, although a most important one. Plans for the improvement of our inland navigation may fairly begin with our greatest river and its chief tributaries, but they cannot end there. The lands which the Columbia drains include a vast area of rich grain fields and fruit lands, much of which is not easily reached by railways. The removal of obstructions in the Columbia and its chief tributaries would open to navigation and inexpensive freight transportation fully 2,000 miles of channel. The Sacramento and San Jaoquin rivers with their tidal openings into San Francisco Bay are partly navigable now. Their navigation should be maintained and improved, so as to open the marvelously rich valley of California to inexpensive traffic, in order to facilitate both rate regulation and the control of the waters for other purposes. And many other rivers of the United States demand improvement, so as better to meet the requirements of increasing production from the soil, increasing manufacture, and a rapidly growing population.

While thus the improvement of inland navigation is a vital problem, there are other questions of no less consequence connected with our waterways. One of these relates to the purity of waters used for the supply of towns and cities, to the prevention of pollution by manufacturing and other industries, and to the protection of drainage areas from soil wash through forest covering or judicious cultivation. With our constantly increasing population this question becomes more and more pressing, because the health and safety of great bodies of citizens are directly involved.

Another important group of questions concerns the irrigation of arid lands, the prevention of floods, and the reclamation of swamps. Already many thousands of homes have been established on the arid regions, and the population and wealth of seventeen states and territories have been largely increased through irrigation. Yet this means of national development is still in its infancy, and it will doubtless long continue to multiply homes and increase the productiveness and power of the Nation. The reclamation of overflow lands and marshes, both in the interior and along the coasts, has already been carried on with admirable results, but in this field, too, scarcely more than a good beginning has yet been made. Still another fundamentally important question is that of water power. Its significance in the future development of our whole country, and especially of the West, is but just beginning to be understood. The plan of the City of Los Angeles, for example, to bring water for its use a distance of nearly 250 miles—perhaps the boldest project of the kind in modern times—promises not only to achieve its purpose, but in addition to produce a water power sufficiently valuable to pay large interest on the investment of over $23,000,000.

Hitherto such opportunities for using water to double purpose have not always been seized. Thus it has recently been shown that water enough is flowing unused over government dams, built to improve navigation, to produce many hundreds of thousands of horsepower. It is computed that the annual value of the available but unused water power in the United States exceeds the annual value of the products of all our mines. Furthermore, it is calculated that under judicious handling the power of our streams may be made to pay for all the works required for the complete development and control of our inland waterways.

Forests are the most effective preventers of floods, especially when they grow on the higher mountain slopes. The national forest policy, inaugurated primarily to avert or mitigate the timber famine which is now beginning to be felt, has been effective also in securing partial control of floods by retarding the run-off and checking the erosion of the higher slopes within the national forests. Still the loss from soil wash is enormous. It is computed that one-fifth of a cubic mile in volume, or one billion tons in weight of the richest soil matter of the United States, is annually gathered in storm rivulets, washed into the rivers, and borne into the sea. The loss to the farmer is in effect a tax greater than all other land taxes combined, and one yielding absolutely no return. The Department of Agriculture is now devising and testing means to check this enormous waste through improved methods of agriculture and forest management.

Citizens of all portions of the country are coming to realize that, however important the improvement of navigation may be, it is only one of many ends to be kept in view. The demand for navigation is hardly more pressing than the demands for reclaiming lands by irrigation in the arid regions and by drainage in the humid lowlands, or for utilizing the water power now running to waste, or for purifying the waters so as to reduce or remove the tax of soil waste, to promote manufactures and safeguard life. It is the part of wisdom to adopt not a jumble of unrelated plans, but a single comprehensive scheme for meeting all the demands so far as possible at the same time and by the same means. This is the reason why the Inland Waterways Commission was created in March last, largely in response to petitions from citizens of the interior, including many of the members of this Congress. Broad instructions were given to the Commission in accordance with this general policy that no plan should be prepared for the use of any stream for a single purpose without carefully considering, and so far as practicable actually providing for, the use of that stream for every other purpose. Plans for navigation and power should provide with special care for sites and terminals, not only for the immediate present, but also for the future. It is because of my conviction in these matters that I am here. The Inland Waterways Commission has a task broader than the consideration of waterways alone. There is an intimate relation between our streams and the development and conservation of all the other great permanent sources of wealth. It is not possible rightly to consider the one without the other. No study of the problem of the waterways could hope to be successful which failed to consider also the remaining factors in the great problem of conserving all our resources. Accordingly, I have asked the Waterways Commission to take account of the orderly development and conservation, not alone of the waters, but also of the soil, the forests, the mines, and all the other natural resources of our country.

Many of these resources which we have been in the habit of calling inexhaustible are being rapidly exhausted, or in certain regions have actually disappeared. Coal mines, oil and gas fields, and iron mines in important numbers are already worked out. The coal and oil measures which remain are passing rapidly, or have actually passed, into the possession of great corporations, who acquire ominous power through an unchecked control of these prime necessities of modern life; a control without supervision of any kind. We are consuming our forests three times faster than they are being reproduced. Some of the richest timber lands of this continent have already been destroyed, and not replaced, and other vast areas are on the verge of destruction. Yet forests, unlike mines, can be so handled as to yield the best results of use, without exhaustion, just like grain fields.

Our public lands, whose highest use is to supply homes for our people, have been and are still being taken in great quantities by large private owners, to whom home-making is at the very best but a secondary motive subordinate to the desire for profit. To allow the public lands to be worked by the tenants of rich men for the profit of the landlords, instead of by freeholders for the livelihood of their wives and children, is little less than a crime against our people and our institutions. The great central fact of the public land situation, as the Public Lands Commission well said, is that the amount of public land patented by the government to individuals is increasing out of all proportion to the number of new homes. It is clear beyond peradventure that our natural resources have been and are still being abused, that continued abuse will destroy them, and that we have at last reached the forks of the road. We are face to face with the great fact that the whole future of the Nation is directly at stake in the momentous decision which is forced upon us. Shall we continue the waste and destruction of our natural resources, or shall we conserve them? There is no other question of equal gravity now before the Nation.

It is the plain duty of those of us who for the moment are responsible to make inventory of the natural resources which have been handed down to us, to forecast as well as we may the needs of the future, and so to handle the great sources of our prosperity as not to destroy in advance all hope for the prosperity of our descendants.

As I have said elsewhere, the conservation of natural resources is the fundamental problem. Unless we solve that problem it will avail us little to solve all others. To solve it, the whole Nation must undertake the task through their organizations and associations, through the men whom they have made specially responsible for the welfare of the several States, and finally through Congress and the Executive. As a preliminary step, the Inland Waterways Commission has asked me to call a conference on the conservation of natural resources, including, of course, the streams, to meet in Washington during the coming winter. I shall accordingly call such conference. It ought to be among the most important gatherings in our history, for none have had a more vital question to consider.

There is a great national project already under way which renders the improvement of the Mississippi River and its tributaries specially needful. I mean the Panama Canal. The digging of that canal will be of benefit to the whole country, but most of all to the States of the Pacific slope and the Gulf; and if the Mississippi is properly improved, to the States through which it flows. The digging of the Panama Canal is the greatest engineering feat which has yet been attempted on this globe. The work has been going on most successfully and with fewer drawbacks and difficulties than I had dared hope. When under our treaty with Panama we took possession of the Canal Zone I was confident that we should be able to build the canal, but I took it for granted that we should meet many unexpected difficulties, not only in the actual work, but through, and because of, the diseases which had made the Isthmus a byword of unhealthfulness. The work done in making the conditions on the Isthmus healthy, however, has been so successful that at present the death rate among the thousands of Americans engaged in the canal work is lower than in most localities in the United States. The organization has been perfected, the machinery installed, and the actual work, of the dredges, the steam shovels, and the dirt trains, is going on with constantly increasing rapidity and effectiveness. In the month of September just closed over fourteen hundred thousand cubic yards of material were removed, chiefly from the Culebra Cut—the record removal, two hundred thousand yards better than the August record, of which I spoke the day before yesterday—and if this rate can be kept up, as I believe it will be kept up, the work of digging will be through in half a dozen years. The finishing of the locks of the great dam may take a little longer; but it begins to look as though the work will be completed even sooner than we had estimated.

Remember, gentlemen, that any work like this entails grave responsibilities. The one intolerable position for a self-respecting nation, as for a self-respecting man, is to bluff and then not be able to make good. We have accepted the Monroe doctrine as a cardinal feature of our foreign policy. We have undertaken not only to build but to police and to guard the Panama Canal. This means, unless we are willing to accept the humiliation of being treated some time by some strong nation as a vain and weak braggart, that we must build and maintain our navy at the highest point of efficiency. When the canal is finished our navy can move from one ocean to the other at will; for, remember that our doors open on both oceans. Until then our battle fleet, which should always be kept and maneuvered as a unit, ought now to appear in our home waters in one ocean and now to appear in our home waters in the other. And, oh my friends and fellow-Americans, I most earnestly hope all our people will remember that in the fundamental questions most deeply affecting the life of the Nation there can be no proper division on party lines. Matters of such grave moment should be dealt with along the lines of consistent and well thought-out policy, without regard to any change of administration or of party at Washington. Such questions as the upbuilding and maintenance of the United States navy, the completion of the Panama Canal in accordance with the plans now being carried out, the conservation of our national resources, and the improvement of the Mississippi River, are not party questions. I am striving to acomplish what I can in such matters as these because the welfare of the Nation imperiously demands the action that I am taking. It is action in the interest of all the people, and the need for it will be as great long after I have passed out of public life as it is now. On these great points that I have mentioned, as on others I could mention, from the standpoint of the Nation the policy is everything, while it is of little importance who carries it out so long as it actually is carried out. Therefore, I hope you will see to it, according to your best endeavor, that the policy is accepted as permanent, as something to be persevered in because of the interest of the whole people, and without regard to any possible political changes.

PRESENT STATUS OF THE PANAMA PROJECT

By Brigadier-General Henry L. Abbot, U. S. A., Retired,

Late member of the Comité Technique, sometime Consulting Engineer of the
New Panama Canal Company; and late member of the
U. S. Board of Consulting Engineers.

To form an intelligent appreciation of the present status of the work upon the Isthmus one must understand the physical conditions there existing, the character of the project adopted for the canal, the organization under which the work is now in progress, and what has been accomplished. Each will be considered in turn.

When the concessions and property were transferred by the New French Company to the United States, on May 4, 1904, it was unavoidable, before serious work of construction could be inaugurated, that much preparatory work should be undertaken, and that a definite project for the canal should be elaborated and approved by Congress—which latter was not done until June 29, 1906. The actual period of preparation has covered about three years, and it would be easy to show that in general the time has been well spent; but the details of what has been done in advance of the adoption of the final project pertain rather to history than to the present inquiry. It suffices to state that the cities of Panama and Colon, and the Zone itself, have been supplied with potable water and placed in a sanitary condition entirely satisfactory; that the requisite engineering plant and a large force of laborers, some 30,000 men on the canal and railroad, with comfortable quarters and good arrangements for messing have been provided; that much of the Panama Railroad has been double-tracked, and its yards, docks and other facilities largely extended; and, finally, that at the end of March, 1907, when the present canal organization was inaugurated, nearly six million cubic yards had been excavated from the great Culebra cut at an average cost of about 78 cents per yard; about three and a half millions had been dredged, and work on the locks and dams was beginning. Such, in brief, was the status early in the current year. It remains to consider the elements of the problem as now presented.

Physical Conditions on the Isthmus.

There are no mountains properly so called on the general line of the canal; indeed the highest summits of the continental divide in this district hardly exceed 1,500 feet above tide, while at the Culebra where the route crosses it, and where much work has been done already, the original level did not exceed about 345 feet, now reduced to 312 feet by a slight change in line. For about seventeen miles between Bohio and Empire, igneous rock in the form of brechias, or conglomerates, or massive overflows known locally as the rock of Gamboa, lies at or near the surface; but on both the Atlantic and Pacific slopes it is overlain by ancient sedimentary formations of the tertiary period, composed of much softer materials but occasionally traversed by igneous veins. Nearer the coasts ancient and modern alluvial deposits occur. The deep cut between Bas Obispo and the southern terminus of the Culebra lies chiefly in the softer material; its total length hardly exceeds seven miles, and only about one mile of it is really of a formidable character by reason of its height.

Much has been said about danger to the canal from earthquakes, which are popularly supposed to be frequent throughout all Central America. Fortunately the long chains of volcanoes approaching from the north and from the south both deflect to the eastward before reaching the Canal Zone, to appear in the Lesser Antilles. The Republic of Panama lies near the middle of a quiet district between Chiriqui and Tolima, some six hundred miles apart, where no volcanic eruption has occurred since the miocene tertiary, and where such earth movements as do occur are those transmitted with lessened intensity from distant foci of disturbance. Since the foundation of the old city of Panama, in August, 1519, only two earthquakes classed as severe are of record; but one of them, in 1621, is considered as doubtful by M. de Montessus after a discussion of the ancient documents, and in this opinion he is supported by recent local studies. The other, occurring on September 7, 1882, coincided in time with a violent earthquake at Sucia, on the Atrato River, about fifty miles from the Atlantic. It caused some unimportant damage at Panama and on the line of the railroad, but the fact that it did not rupture the exceptionally flat arches of the ruins of the old Santo Domingo Church, burned in March, 1756, demonstrates that no serious injury would have been done to the massive constructions of the projected canal. These views as to the comparative immunity of the route are supported by recent direct observations covering forty months. Delicate seismographs were established at Panama; and the records, compared with those kept simultaneously at San Jose de Costa Rica under governmental control, showed only four light shocks, as against ninety-one light and thirty-five strong shocks. No route between the oceans—indeed no point on the earth's surface—is wholly exempt from such dangers, but the canal follows the line where exemption seems most probable.

The chief technical difficulty is presented by the Chagres River, whose banks must be closely followed between Gatun and Gamboa, a distance more than half that between the oceans. This turbulent neighbor gives rise to more complex problems than the passage of the mountain ranges which barred the routes of our Pacific railroads,—any engineering project must be adjusted to the terrain, and here the river dominates.

The stream is a typical torrent of the tropics, characterized in nine months of the year by violent freshets, which sometimes, but rarely, develop into destructive floods, inundating the entire valley. The volume at Gamboa may then attain 80,000 feet-seconds; at Bohio, 115,000 feet-seconds; and at Gatun probably 160,000 feet-seconds,—nearly that of the Potomac at Great Falls, Md. If over-generous in the rainy season, the Chagres becomes niggardly in the three dry months, when its flow, largely supplied by ground water, is insufficient to operate a canal with locks. With them storage reservoirs are a necessity. The river has another peculiarity which aggravates the difficulty of its regulation, especially if a sea level solution be contemplated. At Bohio, some twenty-seven miles above the mouth by the course of the stream, the water surface at the extreme low stage is only about a foot above the level of mean tide on the Atlantic coast, where the tidal oscillation is about a foot and a half. Small as this variation is, it causes at such times a three-inch tide at Bohio. But the most important effect of the deficient slope of the bed below that point is to cause a piling up of the water in times of flood, resulting in a maximum rise of some forty feet, which exceeds that at any other point of its entire course and considerably aggravates the problem of regulation unless (as has been done) the dam site be chosen lower on the stream.

The annual flow of the Chagres and its distribution throughout the different months have important bearings upon the canal problem, and they are now well understood. Daily measurements for seventeen years (fourteen by French and three by American engineers) have been made at Bohio, where the drainage of about 700 square miles passes the station. The average monthly volume during this period is 4,587 cubic feet per second, distributed in the different months in the following percentages of total annual flow. For comparison with streams in the northeastern part of the United States, similar estimates are quoted from "Water Power," by J. P. Frizell, third edition, published in 1906. In the Chagres, although rainfall is the primary cause, ground water has much to do with the progressive changes in volume from month to month, as will appear below:

Percentage of Annual Flow (55,044 Feet-Seconds).

	The Chagres	Northeastern U. S.		The Chagres.	Northeastern U. S.
January	7.0	10	July	9.6	2
February	2.7	14	August	10.7	3
March	1.8	20	September	10.5	3
April	2.6	15	October	12.3	5
May	7.2	10	November	15.2	6
June	7.1	4	December	13.3	8

The sedimentary matter carried by the Chagres varies considerably, being of little importance at low stages, but increasing in freshets and floods. The material is so fine that no delta has been formed at the mouth, but it cannot be ignored in a project for the canal. Sand bars exist, especially in the upper river, where the frequent variations in discharge and the rapid slope of the bed produce a very unusual phenomenon—a complete sorting of the material, some bars consisting of fine sand, others of large pebbles, and others of rocks as large as one's fist. The latter probably move only in the great floods when the absorption of the fall existing in the numerous rapids gives a general quasi-uniform slope to the water surface capable of causing extraordinary velocities.

It is manifest that such a river demands the closest study in order to accommodate the canal in the best possible way to its vagaries. This it has received for many years from the engineers of the French administration, and researches are actively continued at the present time. All recent results confirm the older conclusions. One of them of a general character is important as bearing on the work of construction. Both the measured monthly discharges and the recorded frequency and heights of the freshets concur in indicating that alternate epochs of large discharge and of small discharge succeed each other at considerable intervals, and that one of the latter is now and has been passing for some ten or eleven years. The last maximum epoch, the first since the construction of the Panama Railroad, occurred during and probably just before the operations of the de Lesseps Company (1881-88); and it should occasion no surprise if its successor should soon make its appearance.

One most fortunate event occurred in last December in the form of an exceptionally large flood, the first since 1893. It had been eagerly awaited for long years by the engineers of the canal; because the standard flood, upon which the hydraulic problem of regulation had been solved, occurred in 1879, before systematic gauging had begun, and its estimated volume had been based upon the known maximum heights attained at a few points, and upon the study of smaller floods measured subsequently. Verification of the estimates as to volume and duration was earnestly desired. The opportunity was afforded by the records secured by Mr. Arango during the flood of 1906. The level attained at Gamboa was only one foot, and at Bohio only seven-tenths foot below the standard flood, and the duration of the dangerous period was several hours less than had been assumed for 1879. The maximum volume fell below the estimated standard by only about 2,600 feet-seconds at Gamboa and 4,700 at Bohio. The previsions of the engineers, which had been claimed by some to be excessive, were thus amply justified.

This recent flood largely exceeded any other which has occurred in the past half century, except that of 1879. The rainfall at its height, following two weeks of heavy downpours, registered about four inches in twenty-four hours. About fifteen miles of the main line of the Panama Railroad were submerged from two to ten feet, the water standing on the track at Matachin five feet deep; two small bridges were carried away and other damages were reported. The material losses in 1879, enhanced at Colon by a destructive tempest from the north, were much larger.

Another feature of this interesting river has been developed by researches covering about nine years, six under French and three under American direction, and both are perfectly in accord. They were designed to check the conclusions based on geologic examination that no serious percolations are to be apprehended from the artificial lakes to be created for the regulation of the Chagres. The climate of the Isthmus, where frost is unknown and where the regular succession of wet and dry months facilitates the study of rainfall and outflow, has been of great assistance. The result demonstrates that the river traversing a densely-wooded region receives large contributions from ground water, in fact fully one-third of the annual rainfall, and hence that no important subterranean outlets can exist for the escape of the canal reserves. This ground water flow amounts to little or nothing in May, at the end of the dry season, but then gradually and uniformly increases until a maximum is reached in November, after which the rains soon begin to diminish, and in February, March and April the stream is fed almost wholly by ground water. The subterranean flow is thus regulated by the successive filling and emptying of a great reservoir formed by the soil, which has little or no outlet but the bed of the stream. Space is lacking here for the details of these researches, but the practical conclusions admit of no doubt.

The climate of the Isthmus is another element which cannot be ignored in considering the problems of the canal. The temperature from month to month hardly varies throughout the year, the annual mean in the shade being about 80° F. The daily range in the interior in the dry months differs but little from 73° F. at 6 a. m. to 89° F. at 1 p. m.; and in the rainy season from 75° F. at 6 a. m. to 86° F. at noon. On the Pacific coast extremes occur a little later, and the range is some 3° less. The mercury when directly exposed to the sun's rays rises, of course, much higher; at Empire the records show an average of about 106° F. in the months when the sun is far to the southward, and 122° F., or even more, for the months when it is more nearly overhead at noon. Humidity is always excessive, ranging between about 0.80 in the dry months to about 0.87 in the rainy. The uniformity of barometric readings is even more remarkable. During five continuous years at Alhajuela the extreme variation was only 0.44 inch; and at Ancon in 1906 it was only 0.28 inch. Uniformity of high temperature and excessive humidity are the governing characteristics of the atmosphere, and this, with persons of northern birth, produces lassitude and need of occasional change; but on the other hand the absence of frost will greatly assist the making of concrete for locks, and their practical operation in the passage of ships.

The winds of the Isthmus are usually gentle, ranging from five to eight miles per hour on the Caribbean coast and about the same on the Bay of Panama. There is a noteworthy absence of the hurricanes so common in the West Indies, which here are represented only by what are called "northers" at Colon, occurring at rare intervals, but dangerous at such times to shipping lying at the piers. In the interior very little annoyance from winds will be experienced by vessels in transit.

Rainfall here is more subject to known laws than in temperate regions, being regulated by the annual movement of the sun in declination carrying with it the axis of ascending moist air to be condensed by cold in the upper regions and precipitated in the form of a rain belt oscillating north and south following the sun. In the Canal Zone, lying in latitude 9° north, the sun is at the zenith on April 13, moving northward, and again on August 29, returning southward. This naturally divides the year into dry and rainy seasons, sharply defined. The former extends approximately from the middle of January to the middle of April, the rain belt being then to the south. At this time in the interior, where the heaviest work is required, the monthly downfall averages about one inch, falling in about seven days. The rainy season covers the rest of the year, with a monthly downfall averaging about twelve inches falling in about twenty-one days, but on many of these days the showers are light. Near the Atlantic coast the annual precipitation is about 140 inches, while near the Pacific it is only about sixty inches. In the interior it ranges from place to place between these limits. Experience has shown that this heavy downfall practically reduces excavation output in the rainy season not far from twenty-five per cent, largely by reason of increased difficulty in shifting track and transporting material to the dumps.

The health conditions on the Isthmus are no longer what they were during the construction of the Panama Railroad and the tentative operations of the de Lesseps company. Colonel Gorgas, by practically applying modern sanitary methods, has brought about a marvelous improvement, and residence in the Zone is now hardly more dangerous than in many localities in the United States. Formerly the yellow fever caused many deaths, although in nowise endemic, as was proved by prolonged disappearances. As in our southern states, it took the form of epidemics caused by importations. The last one occurred in 1905, but was soon suppressed, no case appearing after May, 1906. Out of a total population of 108,-206 persons in the Zone and the cities of Panama and Colon in September, 1907, only 297 deaths from all causes occurred, showing an annual average per 1,000 of 32.93. For the employees of the canal and railroad the corresponding figures in this month were 41,062, and 98, and 28.63. Under the efficient administration of Colonel Gorgas the dreaded tropical diseases of the Isthmus have lost their terrors.

Project Adopted for the Waterway.

It is known to every one that for long years a struggle was in progress in the United States, first as to the route and later as to the type of construction. Both questions have been happily settled, and it is only needful at the present time to consider the project formally adopted by the government.

The line followed by the canal measures about 40 miles between shore lines, and 49.35 miles between 41-foot contours in the Bay of Limon and the Bay of Panama. Both ports have met the demands of commerce since the earliest dates, and no engineering difficulty will be experienced in adapting them to the largest class of modern shipping. It is well to remember in what follows that the general direction of the route is from northwest to southeast, Panama lying some twenty miles to the eastward from Colon.

At Gatun, three miles from the shore of the Bay of Limon, the canal reaches the Chagres River. Here will be constructed three duplicate locks, with lifts of 29 feet, and a dam to create a lake having 165 square miles of surface and rising 85 feet above mean tide level (which is the same in both Limon and Panama Bays). This great lake forms the summit level of the canal. Its depth on the ship route will be never less than 42 feet, and for sixteen miles its navigable width will generally exceed half a mile. In the next nine miles the width gradually diminishes to 800 feet, 500 feet, and 300 feet; and at Las Cascades, where for only seven miles the route becomes properly speaking a canal, the depth at the normal stage is maintained at 45 feet and the width at bottom at 200 feet. At Pedro Miguel, thirty-two miles from Gatun, a descent of 30 feet is made to a second lake (Sosa) by one duplicate lock. This lake, raised 55 feet above mean tide, is formed by two principal dams, of which the most important one is situated near La Boca, where are also two duplicate locks to conduct to the Pacific. The distance across the lake is five miles, making the total distance between ocean shore lines only forty miles, of which more than three-quarters lie in navigable lakes.

As intimated above, six locks are required, three at Gatun to reach the great lake; one at Pedro Miguel, to descend to Lake Sosa; and two at La Boca to reach Panama Bay. Their dimensions, required by the law of Congress to accommodate vessels "of the largest tonnage and the greatest draft now in use, and such as may be reasonably anticipated," are, subject to revision, to be 1,000 feet long, 100 feet wide, and 40 feet deep. These dimensions under the law much exceed what was previously considered to be necessary to meet the probable needs of commerce for at least half a century. Thus the Comité Technique proposed 738 feet, 82 feet, and 32.8 feet; and the Isthmian Canal Commission of 1899-01 recommended 740 feet, 84 feet and 35 feet. Numerous borings and repeated investigations have demonstrated that all of the locks, of the dimensions now proposed, will rest upon rock of such character that it will furnish a safe and stable foundation, and there is no reason to apprehend difficulties or dangers in the passage of shipping. Practical experience with large locks, large ships, and an immense traffic on our great St. Mary's waterway, which carries annually, although blocked by ice in the winter, more tonnage than all four of the other most important ship canals of the world taken together, is conclusive as to safety of passage. With substantial piers of approach, and suitable guard gates, and by moving the vessels by stationary power other than their own, dangers to locks and to shipping in transit are as nothing compared to those frequently encountered by the latter on the ocean.

Gross misrepresentation, largely from interested parties and enemies of the canal, has been rife in the public press concerning the dam at Gatun. This construction is neither more nor less than a large engineering work involving no problems which may not be solved by ordinary methods of procedure. The cross section has been slightly changed, and the upstream slope is to be more gradual than originally proposed. It is a technical matter which the public may safely leave to the engineers in charge. The same may be said of the Pacific dams, which are of much smaller dimensions than the one at Gatun.

It remains to consider how the vagaries of the Chagres and the question of water supply in the dry season are treated in the adopted project. In this connection an important and gratifying discovery has been made since the plan was adopted. The earlier projects had contemplated a dam on the river at Bohio, and detailed contoured surveys below that point were lacking. When the Board of Consulting Engineers decided upon a lower location there was no time to make such surveys before adjournment. Consequently the estimate of the area to be submerged by the dam at Gatun at normal lake level had to be formed from the best maps available; and it was taken at 110 square miles, care being given to avoid any over-valuation, since such would tend to exaggerate the capacity of the lake for absorbing the floods and for storing the reserves. A recent contoured survey has shown the true area at 85 feet elevation, to be 165 square miles; and it is not without interest to see how the change affects the anticipations of the Board.

Beside affording a wide and unobstructed route for shipping in transit, the lake will have two important duties: to absorb in part the excess of volume in floods, and to store the reserves for the three months of deficient river flow. The first requirement was estimated at a rise of two feet above normal lake level; and the second was fixed at a subsidence of three feet, in order to maintain a navigable channel without excessive height in lock walls and lock gates, or unnecessary excavation in shallow parts of the lake. The total oscillation from the normal level of 85 feet above tide was thus restricted to 5 feet. The corresponding figure for the lake projected above Bohio was, in the project of the Comité Technique, 5.7 feet, and in that of the Isthmian Canal Commission of 1899-01, 10.4 feet. Naturally the less the oscillation the simpler will be the problems at the locks. The larger lake is a great advantage, permitting any available funds to be devoted to widening rather than to deepening the navigable channels. This matter will bear a little study.

The rise in floods will depend upon the area of the lake and the permissible rate of outflow. Since the latter is independent of the area of the lake, and the estimated area is now known to be increased 50 per cent, the computed oscillation for flood regulation is reduced to a little over one foot instead of two, the rate of outflow remaining unchanged. This gain, however, is apparent rather than real since the contemplated encroachment, at the end of the rainy season, of one foot on the two feet, with a view to increase the volume available for low water reserves, would no longer be judicious, especially as the largest floods always occur in November and December.

The correction to be made for storage oscillation is not so simple. Three elements are affected: surface area, loss by evaporation and loss by infiltration. The first of these losses is dependent not only on lake area but also on the rate of evaporation; and both area and rate have been affected by new measurements since the report of the Board was submitted. Since no local observations as to evaporation from exposed water surfaces were then available, the rate assumed (0.24 inch per twenty-four hours) was intentionally liberal. This estimation was based on records kept on Lake Nicaragua, with allowance for the "uncertain data as to lake area below Bohio." Actual measurements have recently been made by Mr. Arango on a reservoir at Bas Obispo, giving average monthly losses per twenty-four hours since December 1, 1906, of 0.135 inch, 0.167 inch, 0.181 inch, 0.212 inch, 0.216 inch, 0.151 inch, 0.104 inch, 0.102 inch, 0.116 inch, 0.112 inch, 0.095 inch, and 0.120 inch. The true local values per day are thus 0.20 inch in the three deficient months, 0.12 inch in the rainy months, and 0.14 inch annually. These figures are consistent with the Lake Nicaragua observations (0.19 inch annually), since the annual rainfall in the basin of that lake is about 65 inches, to compare with about 90 inches at Bas Obispo; and the humidity there should be somewhat less and the evaporation somewhat larger. The Board's estimate of the loss by evaporation in the three deficient months was measured by a flow during that period of 710 cubic feet per second. By the correction of the rate this is reduced to 592 feet-seconds for a lake of 110 square miles, which is raised by the increase in area to 888 feet-seconds.

Any estimate of loss by infiltration must at best be based on suppositions. It has been stated above that the Chagres is largely fed by ground water at all seasons, except at the very end of the three dry months; a fact which is inconsistent with serious loss by seepage or escape by subterranean flow. The Board's estimate is represented by a flow of 77 feet-seconds. Since such losses in this valley must be restricted to a few points of escape, it is conservative to assume that adding fifty per cent to the lake surface will not more than double this loss, raising it to 154 feet-seconds. The aggregate of the two losses is thus raised from 787 feet-seconds to 1,042 feet-seconds, an increase of about 33 per cent. To this must be added the Board's estimates for leakage at gates, 250 feet-seconds; for lighting, power, etc., 200 feet-seconds; and, finally, for contingencies, 200 feet-seconds, making a grand total of 1,692 feet-seconds to cover all losses in the dry season other than those for lockage. This total deducted from that contributed by the stream itself in the three deficient months, joined to the volume three feet deep stored in the lake below elevation 85, will represent the volume available for passing vessels through the locks.

The *minimum* flow of the stream at Gatun during the ninety days of deficient flow was estimated by the Board at 1,250 feet-seconds (the average being 2,360): this was based on ample data available at Bohio, and upon over one hundred gaugings of the Isthmian Canal Commission of 1899-01, on the tributaries below that point, including an exceptionally dry year. Ignoring the insignificant reduction of lake surface produced by a subsidence of 3 feet, the storage volume above elevation 82 feet is represented by 13,800 million cubic feet instead of 9,198 million figured upon the old area. Adding these two sources of supply and deducting the losses (1,692 feet-seconds) indicated above, there will remain available for lockage a revised volume of 10,360 million cubic feet. How many transits will this permit in the ninety days of deficient flow?

The following lockage estimates are based on the dimensions now proposed, namely, with a depth of 40 feet, a usable length of 1,000 feet and a width of 100 feet, both of the latter dimensions exceeding those favored by the members advocating a lock canal, who in the text of their report used smaller figures (40 x 900 x 95 feet). To save needless waste of water, and what is even more important, *needless time in lockage*, interior gates were admitted on the Pacific slope, affording a usable length of 550 feet, but not on the Atlantic slope, by reason of the three locks in flight; and in traffic computations it was assumed that eight-tenths of the vessels would use the smaller chambers. Upon these suppositions the volume now to be expended for one daily transit of the canal would be, if using only the large chambers, 71.2 feet-seconds, and if using both on the Pacific slope only, 58.2 feet-seconds. Making the computation with these values, and comparing the results with the old figures, the gain resulting from the new data over that available to the Board is, using only the large chambers, 18.7 daily transits to compare with 13.7; and using both chambers as indicated above, 22.9, as compared with 17.1. The project is thus rendered more attractive than was supposed before the discovery that a larger lake area is available; but if desired the showing may be still further improved by introducing the system of intermediate gates in the triple flight of locks at Gatun, placing the small chambers at the down-stream ends of the upper and middle locks and at the up-stream end of the lower lock. By proper operation of the intermediate gate in the middle lock this location virtually reduces the flight of three locks to a single lock separated from a flight of two by a pseudo-canal about 465 feet long. The manœuvres at a transit will be the following:

Suppose the last ship had ascended by the large chambers, leaving them all full; a ship descending by the small chambers after moving into the middle lock will close the middle gate behind it before descending into the lower lock, thus leaving the little pseudo-canal full. It will remain full, no matter how many ascents and descents be made by the small chambers, provided only that the gates be manipulated properly. If, on the other hand, the last ship using the large chambers had descended, leaving them all empty, the first ship to make use of the small chambers will draw from the summit level a full large chamber lockage with which not only to pass but also to permanently fill the pseudo-canal about 465 feet long. This small extra expenditure occurring but rarely, need not be considered in the computations, being much more than covered by the allowance of 200 feet-seconds for contingencies. Adopting this system at Gatun as well as upon the Pacific slope, the lockage volume for one daily transit of the canal, using small and large chambers in the ratio of eight to two, will be 46.3, to compare with 58.2 feet-seconds, when only the Pacific slope is equipped with intermediate gates. This will further increase the number of daily transit during the dry season to 28.7, to compare with 22.9 when large chambers only are used in the Gatun flight, and to compare with 18.7 without small chambers on either slope.

But it must be noted that these figures by no means limit the possible traffic. It will be easy when more is demanded to store from surplus flow in the rainy season a large reserve in an upper lake formed by the dam projected at Alhajuela (capacity 11,300 million cubic feet, estimated cost $2,400,000), supplemented, if needful, by others on the Trinidad and Gatuncillo. This available volume is represented by the *minimum* annual flow of the Chagres at Gatun, 5,730 feet-seconds as adopted by the Board upon trustworthy records covering fourteen years, the corresponding average flow being 8,173 feet-seconds. In making the computation, losses by evaporation and infiltration in the upper lake must be included, its area being 13.5 square miles. The recently measured rate of annual loss by evaporation (0.14 inch per twenty-four hours) is applied to both lakes; the loss by infiltration in the upper is placed at 10 feet-seconds, proportioned to its area; the other figures above remain unchanged. Such a computation will show that the water supply is ample to permit annually 59.3 daily lockages, using the large chambers only; 72.7 using the smaller as proposed on the Pacific slope; or 91.2 using them on both slopes. These figures demonstrate that the Chagres will meet all possible needs of the canal, and that the only limit to traffic is fixed by mechanical delays in passing ships. The Board with intermediate gates on the Pacific slope figured on twenty-six daily transits, corresponding to an annual traffic of about forty million tons, but this might be increased at any time by adding new locks.

In fine, the adopted project offers easy lake navigation for about three-quarters of the entire distance between the oceans, and meets all the prospective needs of commerce. The delays in passage inherent to a restricted route will be limited to the deep cut at the Culebra, only about seven miles in length, and if desired the entire transit can be made in a single day without encroaching on the hours of darkness. Such advantages as compared with the conditions of any economically practicable route at sea level are cheaply purchased by the passage of a few modern locks.

Present Organization on the Isthmus.

The spring of 1907 may properly be regarded as the end of the preparatory period, inasmuch as the technical plan of the canal or even whether it should be of sea level or lock type, had only been decided by Congress and approved by the President in the preceding June. At this date the status of the work was highly satisfactory. The chief engineer, Mr. John F. Stevens, had created an efficient organization, comprising a working force on the canal and railroad of about 25,000 men, well lodged and fed, with a good supply of modern plant; Colonel Gorgas had accomplished wonders in the sanitation of the Isthmus; and cordial relations had long been established with the government of the republic. The time had come when the work of construction could be pushed judiciously. The President considered that under these conditions the Commission should move its headquarters to the Canal Zone, and as both Mr. Shonts and Mr Stevens had tendered their resignations he radically reorganized this Commission. When Senator Spooner drafted the bill which ultimately became the law authorizing the purchase of the concessions and property of the New Canal Company, he provided that the work should be executed under the War Department, the intention being that the immediate direction should be vested in the Corps of Engineers of the Army, upon which such duties in this country usually devolve; but in the discussion before the Senate this provision was changed, and an Isthmian Canal Commission of seven members was substituted. The present Commission, fourth of the name, combines the two ideas. Its personnel is thus constituted under the immediate direction of the Secretary of War, Judge Taft:

Lieutenant-Colonel George W. Goethals, Corps of Engineers, Chairman.

Major David DuB. Gaillard, Corps of Engineers.

Major William L. Sibert, Corps of Engineers.

Rear Admiral H. H. Rousseau, Civil Engineer, U. S. Navy.

Hon. Joseph C. S. Blackburn.

Colonel William C. Gorgas, Medical Dept. U. S. Army.

Mr. Jackson Smith.

Colonel Goethals, who is also chief engineer, has general charge and direction of construction and engineering. Major Gaillard has special charge of the department of excavation and dredging. Major Sibert, of the department of lock and dam construction, also including the division of meteorology and river hydraulics. Admiral Rousseau, of the department of municipal engineering, motive power and machinery, and building construction. Mr. Blackburn, of civil administration; Colonel Gorgas, of sanitation; Mr. Smith, of labor, quarters and subsistence. Mr. Joseph Bucklin Bishop is secretary of the Commission.

Since this last reorganization, which dates from April 1, 1907, the detail of officers of the Corps of Engineers for duty on the Isthmus has been resumed. On August 1, Major Edgar Jadwin was assigned to the department of excavation and dredging, as division engineer of the Chagres division; and on the same day Major Chester Harding was assigned to the department of lock and dam construction, as division engineer of the Gatun division. On October 16 Captain Horton W. Stickle, and on November 12 Captain George M. Hoffman, were detailed for like duty. These two departments, upon which devolves all work of canal construction proper, are divided locally into nine divisions under the two commissioners in charge.

On July 1, by direction of the President, the duty of purchasing engineering materials and supplies for the Commission was placed under the supervision of the Chief of Engineers of the Army. By his order Major Harry F. Hodges was assigned to this duty on August 15, and officers and agents of the department were directed to make such purchases, inspections and shipments in the vicinity of their several offices as he may request in the name of the Chief, and to render duly authenticated vouchers to him for payment. Under this plan the force at the Washington office of the Commission is largely reduced, and in procuring the needed supplies advantage is taken of existing agencies widely distributed over the United States. The system of accounting is also simplified; the papers now go direct to the Auditor of the War Department, instead of passing to him through an intermediate auditor of the Isthmian Canal Commission.

On March 22, 1907, a new code of civil procedure was ordered by the President to take effect within the Zone on May 1. The chief justice of the supreme court is Dr. F. Mutis Durán, and the two associate justices are Messrs. H. A. Gudger and Lorin C. Collins.

The importance of continuing the French system of river and climatological records is appreciated. The work, assigned to the supervision of Major Sibert, remains organized as a division under Mr. Ricardo M. Arango, who has been in charge since it was created in June, 1905. The fluviograph records with occasional gaugings are continued at Alhajuela, Gamboa and Bohio; and quite recently measures have been taken to determine the contributions of the two important tributaries below Bohio, the Trinidad and Gatuncillo, checked by fluviograph records and gaugings near Gatun. The deficient slope in the lower Chagres at low stages, and the tidal changes of level, although fortunately moderate in the Caribbean Sea, make the determination of discharge at Gatun at such times a delicate one—as has always been the case at Bohio, but to a much less degree. Arrangements have recently been made to put the system of river gaugings to practical use in excavation by sending warnings, twenty-four hours in advance, of interruptions to be expected from freshets or floods coming from the upper river.

Regular observations upon evaporation were inaugurated in December, 1906, at Bas Obispo, supplemented by wind records both as to velocity and direction. An old masonry pool or tank fully exposed to sun and wind was utilized for this purpose, thus making sure that the results will not suggest underestimates of loss in the reserves stored in the prospective lakes. The records to date have been given above.

Two new seismographs of latest type have been ordered recently to replace the original French instruments, in use at Ancon since September, 1900. One will be placed at a position where it will be exposed as little as possible to earth tremors caused by blasting, and the other at a central location to be used in studying the rate and laws of transmission of such earth waves.

To continue the local rain records, which in this district of heavy downfall have practical importance in connection with current works of excavation as well as with studies for river regulation, twelve stations along the line of the canal are now equipped with rain gauges of approved patterns.

In addition, four complete meteorological observatories, provided with instruments like those in use at weather bureau stations in the United States, have been established at Naos, Ancon, Bas Obispo and Cristobal. Here regular observations are made of temperature, barometric pressure, relative humidity, and clouds, together with any special phenomena. At the coast stations tidal records and water temperature are added. In brief, provisions for continuing and extending the scope of the elaborate French observations have received attention.

Potable water is now furnished from four main storage reservoirs,—the Mount Hope near Colon, the Rio Grande for the Pacific slope, the Camacho and the Gatuncillo for the interior,—together with auxiliary pumping stations supplied by them and by dams on the Caribáli and Frijoles rivers.

Progress in Work of Construction.

Between the transfer of the property to the United States on May 4, 1904, and April 1, 1907, in other words during the period of the first two Commissions charged with works of construction, there has been removed, measured in place and at a cost for steam shovel work of about 78 cents per cubic yard:

	Cubic Yds.
At Culebra Cut, by steam shovels:	
In 1904	243,472
In 1905	914,254
In 1906	2,702,991
In 1907, to April	2,021,132
Total	5,881,849
At Gatun, by steam shovels, beginning October, 1906	244,495
At La Boca, by steam shovels, beginning March, 1907	3,905
Total steam shovel work	6,130,249
At Colon, outside canal prism, by dredges	1,732,712
At La Boca, outside canal prism, by dredges	1,950,895
Total by dredges	3,683,607
Grand total excavation	9,810,856

The total estimated excavation remaining on April 1, 1907, to complete the canal, including both steam shovel work and dredging, was:

	Cubic Yds.
Canal prism	101,950,000
Lock sites	7,065,000
Regulating works and diversion channel	2,150,000
Construction channels, Cristobal and Panama	3,350,000
Total	114,515,000

This estimate includes 500,000 cubic yards to completely remove all threatening material at the old Cucaracha slide, which caused the most annoyance in the days of the de Lesseps Company. It lies on the east side of the cut about half a mile from Gold Hill, and to the southward from the deepest part of the excavation. In October, under the heavy rains, an earth movement toward the cut began at a rate of about fourteen feet per day, and three steam shovels were put to work night and day to hold it in check; this soon produced the desired effect.

On July 1, 1907, there were in service on the Isthmus 63 steam shovels, of which 3 were of the 45-ton type, 28 of the 70-ton type with 2.5-yard buckets; and 32 of the 95-ton type, the latter equipped with 5-yard buckets and capable of handling a rock of over ten tons in weight; thirty-seven shovels were under contract. Their chief duty has been and will be at the Culebra division, where the distance of the dumps reduces the output. Thus in this month 132 locomotives were at work there on over 106 miles of track; and the aggregate length of holes drilled for blasting was 19.38 miles. In September this length was 20.5 miles, and 107 tons of explosives were used. On September 17, when 39 shovels were at work, the daily average (eight hours) was 875 cubic yards. On the same day four shovels at the Gatun lock site average 1,305 cubic yards each. These were record outputs. A single shovel in eight hours has registered at Bas Obispo 1,054 yards; at Culebra, 2,188 yards, and at Pedro Miguel, 3,040 yards. This was in November.

The question of labor has presented a different phase since the American occupation. Under the old sanitary conditions experience demonstrated that dependence must be placed upon the negroes of the West Indies, as it appeared that they alone could perform hard labor safely under the tropical sun. Their labor was of a very inferior character, and under the new sanitary conditions it has been found that Spanish, Italian and Greek laborers are not only much superior but also show a less death rate. Over 5,000 of them were employed in November. The negroes suffer much from pneumonia, from which the whites are exempt, or nearly so. At the end of October 25,915 men were working on the canal and 6,139 on the Panama Railroad, the aggregate rolls showing a much larger number. The idea of completing the work by contract, although seriously entertained prior to the appointment of the present Commission, seems now to be definitely abandoned.

Work on the canal is divided locally between two divisions, forming the Atlantic and Pacific approaches, the Culebra division including the cut through the continental divide, the Chagres division extending thence to deep water in Gatun Lake, and the Gatun division including the dam and locks. Each will be considered in turn.

At both of the ocean approaches considerable dredging will be necessary. The Colon division extends from the Gatun locks to Mindi and thence to deep water in the Caribbean Sea; here some 21,000,000 cubic yards are to be removed, of which about 3.7 millions are rock. One 16-inch suction dredge, two 5-yard dipper dredges, and one French ladder dredge are at work, and a second French ladder dredge is undergoing repairs for this purpose. They are served by four French self-propelling hopper barges, known as "Clapets," and one tug, together with six new steel hopper barges requiring to be towed by the others.

The La Boca division extends from the locks at Pedro Miguel to deep water in Panama Bay; and here some 15,000,000 cubic yards are to be removed, of which about one-twentieth is rock. The dredging plant now here consists of two French ladder dredges and one 5-yard dipper dredge served by eight "Clapets;" three steel hopper barges to be towed by the latter are under contract. The old French material has been repaired and is reported as doing excellent service; two of the ladder dredges removed 287,107 cubic yards during October. The new sea-going suction dredge "Culebra" is expected to arrive from Baltimore, via the Straits of Magellan, in January, 1908—a voyage of 12,000 miles. Its consort, "Ancon," which will work pumping material on the Gatun dam when the site has been prepared, has made a fine record in Limon Bay, where it arrived in last August. In September it removed and dumped in the sea off Toro Point 260,773 cubic yards, a volume equivalent to the output of 14 steam shovels served by about 30 trains of 16 cars each; thus 57 men operating the dredge did the work of about 1,500—but working of course in much softer material.

The heaviest excavation is concentrated in the Culebra division between Bas Obispo and Pedro Miguel, a distance of nine and a half miles. This is now organized in five sections of about equal length, each under a local superintendent, reporting through two intermediate engineers to the commissioner in charge, Major Gaillard. Throughout this distance a 10-inch pipe line main has been extended, with 6-inch and 4-inch leads running into the canal prism. Air pressure is maintained by twelve compressors, each having a capacity of 2,500 cubic feet per minute, at 100 pounds pressure, all feeding into the main. This supplies power to the rock drills and stone crushers on the line, and to the coal chutes, and to the machine shops at Las Cascadas and Pedro Miguel. A recent invention of Mr. Bierd, late manager of the Panama Railroad, has introduced an improvement in the mode of transferring the soil to the dumps. Under the heavy rainfall during nine months of the year the constant shifting of track incident to the work has always caused much loss of time. Instead of the old operation of prying up the rails with screw jacks, shifting the ties, and then spiking the track down again, the device of Mr. Bierd shifts the whole at once. It consists of a double-drum hoisting engine with a horizontal and a vertical boom, all mounted on a flat car. It is capable of throwing 5,400 lineal feet of track a distance of 9 feet in eight hours, representing the work of five or six hundred men under the former system. It is operated by three mechanics and six laborers. As this kind of work never ceases, the saving both of time and cost is important. The use of mechanical unloaders also greatly expedites work. A record is reported when a single unloader served by 28 white men and 43 laborers and firemen disposed in eight hours of the material, 5,000 cubic yards, brought by 16 trains.

The Chagres division, so-called, extends from the point where the river first strikes the canal to deep water in Gatun Lake. Here the excavation will approximate to 13,000,000 cubic yards, of which about 5,000,000 are rock. The width of the channel for shipping gradually widens as the deep lake is approached, and crosses the present bed of the river over twenty times. In the northern portion the latter will not require excavation, but the banks throughout form detached peninsulas which must be removed. The rock and earth nearby will be excavated with steam shovels, and the remaining earth will be dredged after the lake begins to rise. Work has been started at three points already. It is here that freshets will cause most annoyance. The old French diversion channels to the southward have been considerably extended, and more work of this kind is in progress.

The following figures show the monthly progress in excavation since the last reorganization of the Canal Commission. At the Culebra in September about five-sevenths of the output were classed as rock.

Output in Cubic Yards in 1907.

MONTH.	BY STEAM SHOVELS.					BY DREDGES NEAR		Total.
	Culebra.	Gatun.	Mindi.	Chagres.	La Boca.	Colon.	La Boca.	
April	879,527	103,459	....	....	1,756	69,889	104,855	1,159,486
May	690,365	70,528	..	....	762	133,847	122,157	1,017,659
June	624,586	75,013	....	.....	4,907	124,118	131,580	960,204
July	770,570	74,165	731	....	13,772	109,922	108,338	1,077,498
August	786,866	105,223	15,257	2,820	15,865	209,554	168,284	1,303,869
September	753,468	123,738	28,837	23,746	12,806	420,842	161,350	1,524,787
October	834,499	177,013	41,078	25,627	7,108	426,282	357,122	1,868,729
November	790,632	162,622	40,003	44,044	8,190	427,572	365,423	1,838,486
Total	6,130,513	891,761	125,906	96,237	65,166	1,922,026	1,519,109	10 750,718

Before the type of the canal was decided (June, 1906) it was impossible to begin work on the locks and dams,—an unfortunate circumstance, because here will now probably be found the chief delays in opening the route to traffic. Operations under the supervision of Major Sibert have, however, started vigorously at Gatun. At the end of August, six steam shovels were excavating at the lock sites and spillway, and railway trestles were erecting and preparations were making for dumping and sluicing materials at the dam. So soon as the pipe line dredges and the plant for mixing concrete can be installed progress will be rapid. Suitable stone and sand for concrete have been located near Porto Bello; also material for cement of the highest grade at a cost not exceeding $1.34 per barrel, in case unreasonable prices should be demanded for supplying it by sea. To reduce expense the idea has been suggested of importing cement clinker to be ground on the Isthmus. Work on the lock and dam sites at La Boca has also been inaugurated actively.

The Panama Railroad is in busy operation. During last June, in addition to the 1,284 commercial trains, 3,874 construction trains were reported as transporting canal materials. As many as 196 trains occasionally passed a single point on a single day. The wear and tear of the hard service upon the cars, loaded often with huge rocks by steam shovels and discharged mechanically at the dumps, demands continual repairs, and the shops at Gorgona, Empire, and Paraiso are under constant pressure. In June work was begun simultaneously at seven different points on the new permanent location of the railroad; about 10,000,000 cubic yards of fill in excess of excavation will furnish dumps for material from the canal prism, as the lake will cause important changes in the line.

But, it may be asked, how about finances? The total outlay needful for opening a governmental route for shipping between the Atlantic and Pacific Oceans, via the Isthmus, is naturally classed under two distinct categories—the technical cost of constructing the canal, and certain collateral expenses of ownership and control, such as for right of way, for Zone government, for sanitation, including that of the cities of Panama and Colon, to be repaid ultimately, and for the commercial operation of the Panama Railroad. These several items are often improperly blended in one, and the daily press is already beginning to claim that nearly the whole of the estimated cost of constructing the canal has been expended already. The truth will be understood from the following statement.

The total expenditures which are properly chargeable to technical canal construction are shown in the following table, based on official statements in the *Canal Record*:

	To Dec. 31, 1906.	To June 30, 1907.
For material and supplies	$3,449,022.96	$3,649,665.13
For general administration	1,124,226.55	1,403,557.68
For construction and engineering	9,729,554.98	15,594,834.17
For plant	12,138,852.17	18,484,300.74
Total since transfer	$26,441,656.66	39,132,357.72

The aggregate outlay for all expenditures, including right of way, during these two periods was respectively $84,440,000.32 and $98,285,110.37. The gross error of charging aggregate outlay to canal construction proper is thus apparent. The question remains, what is the proper standard for judging whether or not the actual work of construction is progressing in a satisfactory manner from a financial point of view.

In the act approved June 29, 1906, Congress specifically indorsed the project submitted by the members of the Board of Consulting Engineers favoring the lock type of canal, for which the estimate was $139,705,200. This estimate includes no part of the outlay (approximately $16,000,000) prior to the rendition of their report (January 10, 1906), and expressly excludes all future costs of sanitation and of the Zone government. Furthermore, the unit prices were based on a 10-hour day, which had always ruled on the Isthmus, and to which the adoption of an 8-hour day has added 20 per cent in so far as the cost of labor is involved. Thus it appears that, even omitting this last increment of the estimate, only about $10,000,000 should be considered as expended upon the adopted project on December 31, 1906, and only about $23,000,000 on June 30, 1907. In other words, at the latter date there remained of it unexpended about $117,000,000. Wage rates ruling higher than those under the direction of the private French companies, and much larger and more expensive locks than were contemplated by the project as submitted, may enhance the estimated cost; but there is no indication that there will be a serious deficit.

In fine, an era of rapid progress has been inaugurated under an efficient organization, with every promise of success, and the expenditures have been kept within reasonable limits. It would still be premature to predict any exact date of completion, but there is no reason to apprehend needless or long delay. The estimate of the Consulting Engineers reporting the project (but with locks of smaller dimensions) was nine years, dating from the beginning of active prosecution of the work. Nearly one year of the nine has already passed, and any reduction of this estimate will reflect credit on the canal administration.

Note.—The important announcement has just been made that the President, upon the recommendation of Colonel Goethals, has approved a radical change in the plan of the canal near the Pacific coast, by suppressing the projected Lake Sosa and transferring the two locks in flight from La Boca to Miraflores, thus locating the latter about four miles inland and connecting them with the ocean by a channel at sea level about 500 feet wide. This was the disposition adopted by the engineers of the New Panama Canal Company, and it is decidedly an improvement, since it not only largely reduces the cost but also places the locks in a position much less exposed to bombardment by a hostile fleet. Numerous test pits at Miraflores demonstrate that solid rock foundations exist for the locks at that locality, and the construction of two large dams becomes unnecessary.

LEGISLATIVE PROGRAM CONGRESS SHOULD ADOPT FOR IMPROVEMENT OF AMERICAN WATERWAYS

By Joseph E. Ransdell, LL.D.,
Member of the Rivers and Harbors Committee of Congress from the Fifth Louisiana District, and President of the National Rivers and Harbors Congress.

There has been much discussion about the improvement of the waterways of the United States during recent years, and great and general interest has been aroused on the subject. A number of waterway associations have been formed to press upon Congress the importance of specific projects; and though local in character, many of them represent very large sections and have gathered into their ranks great numbers of men and much capital. Among the most prominent of these associations are: The Western Waterways Asociation, which aims to unite in a concentrated effort for the common weal all the streams of the Mississippi Valley; the Lake Carriers' Association, which carefully watches all lake interests; the Interstate Mississippi River Levee Association, which looks after the levees of that river from Cairo to the Gulf; the Ohio Valley Improvement Association, whose object is to deepen the Ohio River to nine feet from Pittsburg to Cairo; the Upper Mississippi River Improvement Association, which wishes to see good navigation on the father of waters from St. Louis to St. Paul; the Lakes-to-the-Gulf Deep Waterway Association, which proposes to connect Lake Michigan and the Gulf of Mexico by a channel of fourteen feet; the Missouri Valley River Improvement Association, which expects to have not less than eight feet and hopes to have twelve feet in that great stream from its mouth to Omaha; the Interstate Inland Waterway Association, which seeks to join the Mississippi River and the Rio Grande by a nine-foot canal, linking together the various waterways along the coasts of Louisiana and Texas; the Columbia River Association, which hopes to overcome the obstacles to navigation in that mighty river by a canal and locks at The Dalles and by rock dredging above; the Atlantic Deeper Waterways Association, which advocates a continuous inland route for our naval and merchant ships from Boston to Jacksonville, Fla., thereby avoiding all dangers of the open ocean, and which hopes ultimately to cross the Florida peninsula and skirt the Gulf coast to New Orleans; the Tennessee, the Cumberland, the Ouachita, the Red, the Trinity, the Chattahoochee, the Cape Fear rivers associations, and many others.

In addition there has been the most vigorous and determined effort on the part of maritime interests in the great seaport cities, like Philadelphia, New York, Boston, Baltimore, Norfolk, Savannah, Tampa, Mobile, New Orleans, Galveston, Los Angeles, Oakland, Portland, and Seattle.

All these associations have labored with much energy and with more or less success for their own particular projects without any concert of action; and it was to bring about a united action of all waterway interests that the National Rivers and Harbors Congress was organized in the fall of 1901 and reorganized on its present basis in January, 1906. This association is composed of large numbers of individuals, corporations, commercial organizations, and waterway associations from thirty-three states, and it is in every sense of the word *national.* It does not advocate the improvement of any particular project, but seeks to unite all friends of waterways in an effort to have Congress adopt a definite policy that will provide for the complete improvement within ten years of every worthy and deserving water course on our seaboards, lakes, and interior. *It stands for a policy, not a project.* Its slogan at the great reorganizing convention of January, 1906, in Washington, D. C., was: "An annual rivers and harbors bill carrying at least fifty million dollars:" and again that slogan was repeated at the much greater convention at the nation's capital in December, 1906, while Congress was in session. Largely as the result of sentiment aroused through its efforts, and the splendid co-operation of all other waterway associations and interests, the greatest rivers and harbors bill in our history was enacted in June, 1907. This association will hold another great convention at Washington in December, 1907 (before this article is published), and again it will stand for "An annual rivers and harbors bill carrying at least fifty million dollars."

These river and harbor bills for the past ten years were enacted by Congress triennially: in 1896, 1899, 1902, and 1905. Then, through the united efforts of all our waterway associations and their friends, came the bill of 1907, at the end of *two* instead of *three* years. The next convention of the National Rivers and Harbors Congress will insist in the strongest possible way upon *a bill every year,* and will do its utmost to have one enacted next spring at the first session of the Sixtieth Congress. *The annual feature of these bills is regarded as of paramount importance.*

What is the reason for all this agitation and interest? Is it sentimental or is it founded on solid business principles? Undoubtedly on the latter. There is no sentiment about it. The people are very much in earnest. They have ascertained by experience and study that transportation by water is not only much cheaper than by rail, but also much quicker. When freight is loaded in boats on lakes, canals or rivers it moves promptly at a speed of from five to ten miles an hour to its destination, where it is quickly discharged, and the boat started on another trip. When loaded on cars, it frequently remains on a sidetrack for some time, and after reaching its terminus, the cars are again sidetracked and used for days and weeks as storage warehouses. The best authorities say that the average movement of freight by rail in our country is only twenty-five miles per day—only about one mile an hour. I have never seen statistics as to the movement by water, but anyone familiar with the enormous commerce on the Great Lakes, where ten-thousand-ton ships make the round trip from Buffalo to Duluth and return—two thousand miles—every eight to nine days, carrying heavy loads each way, can see that the movement there is considerably over 200 miles a day.

At my home, Lake Providence, La., on the banks of the Mississippi, 400 miles from New Orleans, we have large steamers, and also the railroad, but we never think of shipping bulky articles by rail that can come or go by boat. Cotton is our principal product, and we ship it to New Orleans with the certainty that it will reach there and be in the consignee's hands within three days. If sent by rail, it would be big luck to have it reach the consignee in ten days. *The delivery by boat in three days is certain and by rail in ten days is most uncertain.* I do not think sufficient stress has been laid upon the greater rapidity of freight movements by water than by rail, and invite a study and comparison thereon. It is the old story of the race between the tortoise and the hare. The former won in spite of his slow movements because he kept going. And the boats win for the same reason. They do not slumber on side tracks, as the hare and the railroad, but keep moving like the patient tortoise and win every time.

As to the relative cost by the two methods, there can be no difference of opinion. The Interstate Commerce Commission reported that the average cost of moving freight by rail in 1906 was *7.48 mills per ton per mile.* The statistical report on the lake commerce for 1906 by Colonel Davis, U. S. E. C., shows it cost to move over 51,000,000 tons through the Sault Ste. Marie Canal last year *.84 of one mill per ton per mile, or one-ninth of the average rail rate.* Major William L. Sibert, now a member of the Panama Commission, for years United States Engineer at Pittsburg, and one of the most accomplished members of the engineer corps of the army, estimates that in 1905, in spite of the unsatisfactory condition of the Ohio River, it cost to move freight from Pittsburg to Louisville .76 of one mill per ton per mile, or one-tenth the average rail rate, and from Louisville to New Orleans .67 of one mill per ton per mile, or one-eleventh of the rail rate. From the best information I can get after a careful study of the subject, I am convinced that *waterway transportation in this country, under favorable conditions, costs only about one-sixth as much as the average cost by rail.*

The above remarks apply to the lakes and rivers and furnish unanswerable arguments for their improvement; but there are just as good reasons for giving our harbors the greatest available depth and placing them on a par with the great foreign ports which receive our splendid commerce. The larger the ship the greater its carrying capacity and the cheaper its rates of freight. Vessels drawing twenty-eight to thirty-two feet and carrying eight to twelve thousand tons can and do carry freight very much cheaper than those drawing twenty-two to twenty-four feet and carrying three to four thousand tons. The ocean rates to-day on the immense steamers plying at our great harbors, which have been deepened to thirty and more feet, are from one-third to one-fourth the rates of twenty-five years ago, when steamers drew only twenty-two to twenty-three feet; and this saving of 300 to 400 per cent in transportation charges is directly due to the improvement of these harbors. Our government never made a wiser expenditure of its funds. The farmer on the western plains and the cotton grower of the South get the direct benefits of these cheap rates, for his produce is worth on his farm its price at Liverpool or Antwerp less the cost of transportation from the farm to those great markets. Every citizen of the Union is benefited. *Practically all our waterway expenditures have been profitable investments. They have returned in reduced freight rates to the American people from 100 to 200 per centum every year.* And yet while appropriations for most purposes of government have been liberal, those for waterways have been stingy and unbusinesslike in the extreme. During our entire history as a nation, to the close of the last fiscal year, on all our waterways of every sort, including those in far away Hawaii, the total expenditure was only $523,330,232; yet we gave the navy during the past five years $490,199,715. *Nearly as much to the navy in five years as to rivers and harbors during the 118 years of our national existence!*

For the five years ending June 30th last all our seaboard and lake harbors, our lakes, rivers, and canals received an average annual appropriation of only $23,425,131.30—less than 3 per cent of the total expenses of government, and a sum entirely inadequate to their merits and needs. The December convention of the National Rivers and Harbors Congress will insist that this appropriation shall hereafter be *not less than fifty million dollars every year.*

The rivers and harbors act of last session carried an appropriatian of $34,631,612 in cash, and authorized contracts to the amount of $48,834,526, making a total of $83,466,138. Under the authorization clause, various works will be placed under contract and will be paid for from year to year as appropriations are hereafter made by Congress. In some instances it will be seven or eight years before these contracts are completed, hence some of the sums authorized in this bill will not be actually appropriated for several years.

This bill was the wisest and most businesslike rivers and harbors bill ever enacted in our country. It provided all sums necessary for the completion of some most important works, notably at the harbors of Boston and Baltimore, the channels at the mouths of the Mississippi and Columbia rivers, the new lock at Sault Ste. Marie, and the new channel in the Detroit River. These six projects required $24,426,104 to complete them, and the total was carried in the bill. Work was already in progress, under the act of 1905, at Boston and Baltimore, and on the Mississippi and Columbia rivers, but the Sault lock and the Detroit River project were entirely new, and the amount they received was $12,870,950. These six great and deserving projects are now out of the way, and need no consideration in future bills. Let us compare the wisdom with which they were handled in the bills of 1905 and 1907 with some other waterway projects.

We undertook to improve the Harlem River in New York City, within the shadow of Wall Street, in 1878, twenty-nine years ago, on a plan estimated to cost $2,700,000. During those twenty-nine years about $1,350,000 have been appropriated and spent, and the work is only about one-half finished. The commerce on the Harlem River last year was 9,998,021 tons, valued at $270,210,309. At the present rate of appropriation it will require another twenty-nine years to complete the project.

About twenty-three years ago we began a project for six-foot slack-water navigation on the Warrior and Tombigbee rivers in Alabama to connect with as rich coal mines as there are on earth and to supply cheap coal to the whole Gulf coast, to our navy, and to the great ocean fleet of that section. At first the project was estimated to cost $3,000,000, but subsequently the plan was changed and the estimated cost increased to $6,000,000. After twenty-three years it still remains far from completion.

In 1875-76, some thirty-two years ago, a project providing for a six-foot slack-water navigation on the Ohio was adopted and work begun thereon. It has proceeded with a snail's pace. Out of fifty-two locks and dams provided for in this project only six have been completed and four others are in process of construction. The project has been changed to a nine-foot depth instead of six, and the estimated cost of completion is $63,000,000. If this gigantic and most meritorious work is continued at the same rate as for the past thirty-one years, it will not be finished by the close of this century. It is true that a little better progress has been made during the past seven years, and at the present rate we may hope to see the Ohio canalized in about fifty years.

These are striking examples of the extreme slowness and unbusinesslike way in which river and harbor works have been carried on. It was not the fault of the rivers and harbors committee. They did as well as they could with the limited amounts at their disposal. Public sentiment did not seem to be with them in the past, and they could not provide the large sums necessary to push meritorious works to speedy completion. And yet the clamor from many communities was so great that they could not avoid making partial appropriations for prosecution of projects which could not be entirely finished, although they realized how much wiser it would have been to confine their efforts to fewer works and finish them as they went along. This policy of completing old projects before undertaking new ones was to a great extent applied in the act of 1907, and is much wiser.

Now what should be the legislative program that Congress should adopt for the improvement of American waterways? In my opinion, *one that will provide for the proper improvement within the next ten years of all waterway projects along the seaboard, the lakes, and the interior rivers that are really worthy of it, and whose improvement seems warranted by prospective benefits to commerce.* I fix ten years as the period because:

First. The cost of these improvements will be considerable—probably half a billion dollars for the projects already surveyed, which amount would require an appropriation of fifty millions a year for that period.

Second. The character of the work in most cases is such that it must proceed slowly, and even if the total sum were available it would require about ten years to finish many of the greater projects. Some of them are fairly comparable in difficulty of detail and execution with the new Erie and Panama canals, and the engineers of those two great works estimate for their completion at least ten years from inception.

Third. The most ardent enthusiast of waterways is willing to admit that in practical government its various branches should move along "pari passu," and all he expects is a reasonable legislative program which places waterway improvement on a parity with other government works.

Now would it be unreasonable to expend fifty millions, or even one hundred millions, a year for improving our waterways, materially benefitting commerce, reducing freight congestions and cheapening freight rates, so that every citizen of the Union would feel its good effects? By no means. It would be most reasonable and wise. Let us institute a few comparisons on which to base an opinion. For the five years ending June 30, 1907, fortifications received an annual appropriation of $6,761,480, nearly one per cent of all expenses of government; the army received $80,509,480, or about 10 per cent; the navy, $98,030,042, or about 12 per cent; and pensions, $140,851,836, about 17 per cent; while rivers and harbors received an average of only $23,425,121.30 a year as above set out, or less than 3 per cent. Commerce is surely as important as war; and as we are now giving to war and its rewards—fortifications, the army, the navy, and pensions—$336,168,748 a year—over 40 per cent of the expenses of government—and only about 3 per cent to rivers and harbors, surely we can afford to give to our waterways for commerce at the very lowest calculation at least fifty millions, or 7 per cent. If we made it one hundred millions it would be only 14 per cent of our annual expenditures and still not be on a par with those made for war.

How shall we secure this program? The present method of passing rivers and harbors bills every two or three years, which in many instances makes only partial provision for specific projects and does not commit or bind succeeding Congresses to complete them, is lacking in that continuity of plan and purpose essential to success. This is forcibly illustrated by the cases of the Harlem, the Warrior-Tombigbee, and the Ohio Rivers above cited, and there are a great many others exactly similar. The last bill, as stated, was a vast improvement in this respect and made definite provision for the final completion of six great projects. If we could have such a bill every year as that of last June, each providing for the completion on the continuous contract method of several projects, the work would be well in hand very soon, and we could expect the consummation of our hopes within a few years.

I am strongly of the opinion that for the present the best plan for Congress to pursue is to pass a rivers and harbors bill at the coming session carrying in cash and authorizations from fifty to sixty million dollars and making provision:

First. For the completion of several of the more worthy projects under way, whose aggregate cost will not exceed one-third of the bill; say about eighteen to twenty millions.

Second. For the active prosecution on a generous scale of other great works now under construction, whose total cost is too great to permit of provision for completion in one bill.

Third. Adopting plans for and beginning work on some very important new projects not yet adopted; and

Fourth. Ordering surveys for proposed projects of much apparent merit.

I would like to see the completion of as many projects as possible definitely provided for in this bill and the work placed under continuing contract, so that no change of administration or policy could jeopardize the success of a work or indefinitely delay it, after it had once been adopted and begun, as was the case with the Harlem, the Warrior-Tombigbee, and the Ohio Rivers, as explained above.

It would not be feasible without a complete change in the present methods to provide in one bill for the completion of colossal projects like the Ohio River, which will cost over $60,000,000, or the lakes to the Gulf deep-waterway, which will cost much more than the Ohio; but if the bill of next spring definitely adopts the plan for nine feet from Pittsburg to Cairo and makes an appropriation of two and a half millions in cash and five millions in authorizations for the completion of six or seven designated locks and dams on the Ohio, and does as well for the lakes to the Gulf deep-waterway, it would place those two truly great projects on a fairly safe basis, and reduce to a minimum the chances of further delay in their completion.

The same would be true of other projects of great magnitude and cost. They could not be fully provided for, but might be adopted as a whole and good round sums be appropriated to prosecute the work thereon. The rivers and harbors bill of the following year could make further provision for them, and in a few years they would be finished. Of course this theory is based upon the idea *that we are to have an annual rivers and harbors bill in the future, and that it is to carry an average of at least fifty million dollars every year.* If we are to follow the past method of a bill every two or three years, I see no hope for the speedy improvement of our great internal river systems. The harbors and connecting channels on seaboards and lakes will be promptly finished in the future just as they have been in the past, for *they are railroad terminals, but our rivers which are railroad competitors* will not be completed under the present methods within any reasonable period of time. *We must change the method. We must pass rivers and harbors bills every year, and they must carry at least two and a half to three times as large appropriations as in the past. That is the only sure plan, in my judgment—a rivers and harbors bill every year carrying not less than fifty million dollars.*

Transportation is one of the most important questions in the commercial world, and its importance will increase with the growth of wealth and population. Quick and easy transfer and exchange of commodities between different communities is the very life of trade. The cotton grower and lumberman of the South, the grain and meat farmer and lumberman of the West, must send their bulky products to our populous middle and eastern sections and to Europe, receiving in exchange innumerable articles of manufacture, etc. Large numbers of people are constantly moving from place to place, and the mail must be carried with rapidity. The more enlightened and civilized a people becomes the more complex and important are their transportation problems. If all communication with the outside world were cut off from New York City for a week and no food supplies were sent in by water, rail, or earth roads, many people would starve. During the past two years the whole country has been aroused on this subject as never before. Many communities have suffered terribly because a lack of transportation facilities prevented them from moving their commodities. Congress has passed the rate bill, and many state legislatures have enacted laws intended to benefit transportation. Everybody is talking about the subject in some form. Many people think repressive legislation against the railroads will solve it, and others that a complete and thorough development of our waterways would be the panacea for all our transportation ills. None of these people are entirely right, and all have more or less right on their side. One feature of the question is admitted by all and that is its *national character. Nature recognized no state lines in laying out her mighty waterways, and man had as little regard for them in constructing railroads.* Our waterways and railroads are interstate. They extend far beyond the confines of states and should be controlled by the nation rather than by the states.

In my judgment the great importance of this subject warrants the creation by the next Congress of a department of transportation, with full charge of all matters relating to highways, railroads, and waterways. Its chief should be a Cabinet officer—the Secretary of Transportation—and his duties should be limited to subjects connected with transportation.

At the present time the Interstate Commerce Commission which executes our laws relating to public carriers is an independent body, not connected with any of the departments. Waterway improvements are under the War Department, and are an incident or a side issue not naturally connected with the main business of that great department; and such meager legislation as we have on the subject of highways is executed by the office of good roads of the Agricultural Department. If all these matters were consolidated in one department their importance would be greatly emphasized and they would receive more consideration at the hands of Congress. How can the Secretary of War, with the manifold and difficult duties imposed upon him, be expected to give much attention in Cabinet council, in his reports to Congress, and elsewhere to the *needs of a side issue like waterways?* How can the Secretary of Agriculture insist upon good roads legislation when purely agricultural subjects make such a drain upon him? And what Cabinet officer is there to handle railroad questions? Let us create this department of transportation by all means. It would have plenty to do and would not be exceeded in importance and beneficent effects by any of the older departments.

Pending action on this department, I sincerely hope the coming session of Congress will create a *national* waterways commission similar to the *internal* waterways commission appointed by the President last spring. It should be required to study the waterways of America on seaboard, lake, and interior, and also those of the Old World, with a view to advising Congress how to establish the best and most comprehensive system of water transportation for our country. In doing this our principal waterways should be visited and carefully inspected; experts and business men should be advised with; and all scientific knowledge availed of. The commission should visit and study on the spot the waterways of Europe and elsewhere, so as to get the benefit of all the world's experience on this subject. And the result of its studies and conclusions should be submitted to Congress. Its powers should be limited to obtaining information in regard to waterways, together with the allied subjects of forest preservation and irrigation, and giving advice concerning them to Congress. If the department of transportation is created, this commission should be one of its important bureaus.

To sum up, I would say that the legislative program which Congress ought to adopt at its next session for the improvement of American waterways should be:

First. The prompt passage of a rivers and harbors bill carrying in cash and authorizations not less than fifty million dollars.

Second. The creation of a national waterways commission to study our waterways and advise Congress thereon.

Third. The creation of a department of transportation with control of all matters relating to highways, railroads, and waterways.

THE USE AND DEVELOPMENT OF AMERICAN WATERWAYS

By Honorable Francis G. Newlands,
United States Senator from Nevada, and Vice-Chairman of the Inland Waterways Commission.

The Inland Waterways Commission is the outgrowth of an agitation which has been conducted for some time, particularly in the Mississippi Valley, for the improvement of our waterways. The President was urged to exercise his constitutional power of making recommendations to Congress, and, pursuing his usual method of first exhausting investigation, appointed an executive commission with a view to gathering into one body a number of men who, either in legislative or in administrative work, had acquired experience in the problems relating to the waterways of the country.

Appointment of the Commission

As chairman of this commission the President selected Honorable Theodore E. Burton, of Ohio, who, as the head of the Rivers and Harbors Committee of the House of Representatives, had discharged the duties of that important position with rare intelligence, thoroughness, and public spirit. He also appointed two United States Senators, Honorable William Warner, of Missouri, and the writer; another member of the House of Representatives, Honorable John H. Bankhead, of Alabama (the leading minority member of the Rivers and Harbors Committee of the House), who has since become senator; and five members of the executive department of the government. These scientific members are: General Alexander Mackenzie, Chief of the Engineers Corps of the Army; Dr. W. J. McGee, a scientist and naturalist connected with the Bureau of Soils in the Department of Agriculture; Mr. Frederick H. Newell, Chief of the Reclamation Service; Mr. Gifford Pinchot, Chief of the Bureau of Forestry; and Mr. Herbert Knox Smith, Chief of the Bureau of Corporations. The President reserved the right of adding to the commission, in the future, certain transportation experts; and it is possible that the commission may, before its work is completed, take up in the broadest way the whole question of transportation.

Purpose of Its Appointment

The duty imposed upon this commission was to investigate the use of water, not only for navigation, but also for all other purposes, with a view to recommending to the President a full and comprehensive plan for the development and utilization of all the natural resources of the country relating to water. Its primary purpose was to facilitate water transportation, upon which the prosperity of the country so largely depends. We have been for some time engaged in the consideration of questions relating to railways and we are now about to enter upon the related question of waterways.

Work Performed by the Commission

Since its appointment the commission has been hard at work upon the problems assigned to it. An organization was effected in Washington, on April 29, 1907. Early in May the commission took a trip down the Mississippi River from St. Louis to the gulf and studied the problems of the lower part of that river. In September, a part of the commission visited the Pacific Coast and inspected the Sacramento and San Joaquin rivers in California and the Columbia River in the Northwest. Beginning September 21, the entire body started on a tour of the Great Lakes, embarking at Cleveland and ending at Duluth. Passing from Duluth to St. Paul by rail, the journey was resumed down that river on board a government boat and continued to Memphis, the President joining the party at Keokuk. After the Memphis convention, most of the members of the commission proceeded to Kansas City, and from that place made a tour of inspection down the Missouri River to its mouth. In these various tours, covering thousands of miles, daily meetings were held at which government engineers and other experts were examined and much testimony taken relative to the conditions and needs of the rivers.

Besides attending the convention at Memphis, the commission was also represented at the Irrigation Congress at Sacramento, California; the Transmississippi Congress at Muskogee, Oklahoma;

the Upper Mississippi Convention at Moline, Illinois; at the Atlantic Deeper Waterways Conference, in Philadelphia, late in November; the recent congress of the National Drainage Association, in Baltimore, and the National Rivers and Harbors Congress, in Washington, which closed a few days ago. On November 25, the commission again convened in Washington, and have ever since been busy considering their recommendations. The President, in his message to the First Session of the Sixtieth Congress, stated that he would transmit his recommendations regarding the waterways to Congress after receiving the report of the commission. The work thus far performed is highly instructive and important; but until their report is formulated and made public, what I shall say upon the subject must be regarded as only the expression of my individual views.

Importance of the Subject

The transportation question is the most important question of the day, and the reason that it has suddenly (and somewhat unexpectedly to many of us) become of such pressing importance just at this time is because the railway service of the country has practically broken down. Whilst the railway development of the country has astonished the world, and whilst we have to-day more than half the railway mileage of the world, yet that machinery has proven inadequate to meet the demands of the production of the country. Years ago the railways were competing with the waterways and practically drove them out of business. But the efforts of the railways to monopolize the carriage of cheap natural products, carried in other countries by water, has resulted in congestion of traffic and a virtual breaking down of the entire transportation system; and it is essential that we shall take immediate steps to supplement our railway system by a complete system of waterway transportation. Everywhere else in the world water transportation is an important factor in both domestic and foreign commerce. Germany has perhaps the most perfect system of transportation in the world. Her rivers have been artificialized from source to mouth and they are supplemented by a system of canal, rail, and ocean transportation which, combined, give that country a transportation machinery unequaled anywhere in the development of domestic and foreign commerce.

However much we may rely upon the railways for quick transportation of persons and of products, it is clear that the rivers should also be used; that they should be properly artificialized; that their beds should be made stable and their courses sure for the transportation of bulky merchandise. This class of traffic has long occupied too large a proportion of the available capacity of the railroads, to the detriment of other more valuable products and even to the injury of life and limb. Even the great railway managers, such men as Mr. Hill, Mr. Harahan, Mr. Finley, and others are urging the development of the inland waterways as supplementary to the railways. Only a few years ago Mr. Hill is said to have declared that water competition could not exist and that, if he were given the money with which to build a double-track railway beside the proposed enlarged Erie Canal, he would turn the canal into a lily pond. It will be remembered also that with regard to the Mississippi River he declared it could never be made an efficient instrument of commerce until its bottom had been lathed and plastered. But the views of these men are changing, and changing because they realize that their railways have been overtaxed and that they must either expend vast sums of money in their improvement or call in the aid of the waterways. Mr. Hill estimates that it will cost, within the next five years, I believe, five and one-half billion dollars to put the railroads in condition to meet the requirements of the country's traffic. This does not appear to be an over-estimate when we remember that the railroads of the country to-day are capitalized at about fifteen billion dollars, and that there is little double track, although every railroad in the country ought to be double-tracked.

A Comprehensive Plan Necessary

I assume that the country will not be disposed to enter upon the work of improving the inland waterways unless a plan is presented which will fairly meet the requirements of the whole country. The movement represents a policy, not a project. It seems improbable that any particular river, such as the Mississippi, will be fastened upon and pushed forward, without some assurance that all the other rivers which require improvement will also be taken up under a comprehensive plan—one involving, ultimately, the highest possible development of all the waterways of the country. It was doubtless with this thought in mind that the President appointed the commission, and it was doubtless with a view to the formulation of such a plan that he called in the members connected with the Engineer Corps of the Army, the Reclamation Service, the Forestry Service, and the Bureau of Soils. There is practically no difference of opinion, I apprehend, as to the desirability of improving the inland waterways of the country. The public attention is arrested and I never knew the people to be more interested or united. The important thing, now, is to give effective direction to this aroused public sentiment by explaining the true scope of the subject and the importance of scientific legislation for carrying out the comprehensive plans which, alone, will make the undertaking successful. It is possible that the whole question will not be solved for some time, for the reason that Congress rarely takes the initiative; it follows public opinion, rather than leads it. It is fortunate, therefore, that these questions are now being discussed in the various conventions and conferences held throughout the country, and it is important that every man who has a thought of value upon the subject should express it.

Scope of the Work

It is impossible to enter, with hope of success, upon comprehensive plans for the improvement of our inland waterways, without taking into consideration the related questions of forest preservation and restoration, of the irrigation of arid lands, of the reclamation of swamp lands, of bank protection, of clarification of streams, and of other kindred matters.

It is necessary to preserve the forests of the country from the destruction which threatens them, not only because our timber supply is diminishing, but because forests are natural conservators of moisture and aid in the gradual distribution of the waters to the streams and rivers that flow into the lakes and the ocean. When an area of land is denuded of its forests, the waters falling upon it rush off in torrential streams, causing destructive floods and soil waste; but the forest absorbs moisture like a sponge and gives it out gradually to the springs and streams through the season of drought, thus aiding in the maintenance of a stable channel.

So also with the question of the irrigation of the arid lands on the headwaters of our inland rivers. The cultivation of the vast areas on the upper reaches of the western tributaries of the Mississippi involves the construction of great reservoirs for the storage of water, which is caught while the snows are melting and later on let out through canals upon the plains, to meet the demands of the growing crops. These fertile plains drink up the moisture and become themselves great storage basins which return the water by seepage at the time when it is most needed for the maintenance of a channel in the navigable rivers below.

Thus, both forestry and irrigation are essential to the prevention of floods and of soil waste and to the maintenance of a stable channel for navigation—to say nothing of the vast money value or the great sum of human happiness involved in the possession of great forests and vast areas of productive irrigated plains. For the purpose of navigation it is of the very highest importance that there should be a stable channel, one of standard depth; not a variable channel, forty feet deep at one time and one foot at another; not a channel deep in one place and shallow in others owing to the interposition of shoals and quicksands; but one of standard depth, which will accommodate vessels of standard draft, just as there is a standard gauge for railroads. Anything which will retard the flow of the water during the period of flood and make it available in time of drought will, of course, increase the stability of the channel. And thus it is that the questions of forestry and irrigation become the first importance in connection with the problem of the inland waterways.

Few of us realize, as we ought, that the soil of our continent is being washed away and that the bottoms of the navigable rivers themselves are drifting slowly into the gulf and the ocean. The trouble with the Passes at the mouth of the Mississippi is that a great delta has been built up there, like the delta upon which the City of New Orleans stands, where there is now a depth of twelve hundred feet of alluvial soil which has been deposited by that river. It is not impossible that, in time, the gulf might be turned into a continent by this process.

Closely related to the prevention of soil waste is the matter of the clarification of streams; for every grain of sand in these rivers is a tool of destruction when directed against the river's banks, while clear water cuts the banks but little. The Yellowstone, as its name indicates, is pouring into the Missouri immense volumes of sand,

and the Missouri is pouring into the Mississippi vast quantities of alluvial deposits, every grain of which is both a tool for the destruction of the banks and an obstruction to navigation when deposited in shoals and sandbars. The rivers are also the sources of water supply for domestic purposes to cities and towns, and must be purified and made fit for consumption and kept clear of the filth and sewage of cities.

The reclamation of swamp lands must also be considered. Their reclamation means not only the addition of large and fertile areas to the productive resources of the country, but also the control of the streams themselves. These low lands lie at the foot of the rivers, whose waters naturally spread out wastefully in swamps and bayous. The channels fill up and become shallow because there is no current to carry away the sediment; but when confined in comparatively narrow channels by means of levees the water is thereby raised to a higher level and its current is quickened and becomes an efficient power for carrying away the sediment and scouring the bottoms of the rivers, and thus creating a channel of sufficient depth for the purpose of navigation. So that we have also inseparably connected with the question of navigation the related questions of swamp-land reclamation and bank protection.

All these uses of water are important; it is difficult to say which is the most important. But, assuming that the transportation of products is as important as their production, it is clear that for the proper development of our inland waterways we must embrace in one comprehensive plan the treatment of our forests, the irrigation of arid lands, the reclamation of swamp lands, and other related matters. In doing this, vast water-power can be developed, and this power must be saved from the control of trusts and monopolies and care taken to direct its use in the interest of the entire people. It is estimated that, on many of our navigable rivers, the power which can be developed in this way will be sufficient to pay the entire cost of the improvement of the streams.

Can the Waterways be Restored?

The outline which has been given, based upon the requirements of the Mississippi River, is merely an illustration of what is required on the Pacific Coast rivers and, in less degree, on the rivers of the gulf and the Atlantic Coast. The business question before us is whether we can restore these waterways as a part of the efficient machinery for the country's transportation. Many doubt it, and I must confess that when I went down the Mississippi, last summer, and traveled for miles without seeing a single boat, I was inclined to doubt it, also. There were a few tow-boats, but the river towns were neglected, the wharves rotting, and the river fronts largely occupied by the tracks of the railroads, whose trains of cars, running at frequent intervals along the banks, showed how thoroughly they had absorbed the commerce of the region.

These conditions seemed to be due to two causes: The terrific competition of the railroads, which have made a practice of underbidding the waterways during the navigation season and afterward raising their rates; and also to the failure of the government to provide and maintain a stable, navigable channel. I am also of opinion that the railroads have been somewhat influential in obstructing legislation for the improvement of our waterways, but I believe they now see that this was a mistaken policy.

I have no doubt, myself, about the policy of restoring the commerce of our inland waterways, but I think it is likely to be a difficult task. One difficulty will be in providing facilities for assembling and distributing the products to be carried on the rivers. The terminal facilities at the towns on the rivers are now very poor, when they are not entirely in the hands of the railroads; and terminal facilities mean little in themselves unless the connecting lines of railroad are able and willing to take goods from the waterways and distribute them in the interior. The railroads have, as one of the chief elements of their strategic strength, the ability to assemble commerce in every part of the country and to carry it on cars of standard gauge to any other part of the country; whereas the river carriers are, at present, circumscribed in their efforts by the limits of the rivers themselves.

It is therefore necessary that the railroads shall be brought into the most intimate relations with the river carriers, so that the one system will supplement and aid, not injure, the other. We must broaden the area for water transportation, also, so that it can live, if necessary, upon the trade of the towns accessible by boat. The Ohio can be connected by canal with Lake Erie, the Mississippi with Lake Michigan, and so on; and we can connect the entire

Mississippi Valley, the Gulf Coast, and the Atlantic Coast with each other by a system of sheltered waterways along the gulf and Atlantic coasts, such as was so ably discussed at the Philadelphia conference, consisting of bays, sounds and rivers to be connected with each other by canals, such as the contemplated canal across Florida connecting the gulf with the Atlantic Coast, the canal connecting the Carolina sounds with Chesapeake Bay, the canal connecting Chesapeake Bay with the Delaware River, the canal connecting the Delaware River with the Raritan, and the canal across Cape Cod, thus giving a sheltered waterway from the mouth of the Mississippi to Maine, upon which it is possible that boats of standard draft could pass from Boston down the Atlantic Coast, across Florida to the Gulf Coast, and up the Mississippi River to the Great Lakes. If these things were done, and warfare between the railways and the waterways should continue, there would still be sufficient transportation, without the distributing aid of the railways, to constitute a very influential part of the commerce of the country.

But it will scarcely do to predicate the improvement of our waterways upon the continuance of this antagonism. A few weeks ago I was quoted in certain Ohio newspapers as saying that the appointment of the Inland Waterways Commission was a part of the "Big Stick" policy of the President. Besides the fact that I never made such a statement, I believe the contrary to be the fact, and that the President, like the commission, is working for greater harmony, not to stir up antagonism, between the different transportation systems of the country. My own view is that the waterway system ought to be largely supplemental to the railway system and that it may possibly become necessary, in the event of continued hostility on the part of the railways toward the waterways, to enforce a liberal system of interchange of traffic and use of facilities between the two.

Viewing transportation in the large, it is of the highest importance that its machinery should be so adjusted that the common carrier can make the best and cheapest possible use, in the interest of the public, of all the public highways—of river, of railway, and of ocean. A perfect system of transportation would involve but one control from shipper to consignee, and our aim should be a system that will create great corporate carriers, under proper regulation and control, owning railway lines from the Atlantic to the Pacific and from the lakes to the gulf, owning steamboat lines on the rivers and lakes wherever practicable and economical, and also owning great lines of ocean steamers, so that rates can be made and goods be carried from any point in this country to any other point in this country, or to a foreign country, under a single control and at a single rate, and that rate the lowest one consistent with good service and reasonable profit.

Legislative Requirements

Having said this much upon the physical requirements of the problem, let us consider what legislation is necessary in order to carry the undertaking into effect. And here the greatest difference of opinion is likely to exist; for while the country is practically united as to the necessity of undertaking the work, the machinery for setting it in motion has not been carefully considered and already there is divided counsel. It has been thought in the past that our government was incapable of engaging successfully in any great constructive work. This belief has been entirely disproved by the great works begun and continued under the direction of the Reclamation Service and the Panama Canal Service. In the legislation inaugurated for these public works Congress very wisely gave a free hand to the Executive, with the result that by a process of evolution a great administrative organization has been built up in each service, that has been conducted on thoroughly business-like principles. In a bill which I have recently introduced in the Senate (Senate Bill 500), I have endeavored to follow that beneficent legislation, by putting the whole responsibility for the development of the waterways of the country upon the Executive, whoever he may be, conscious that we will never have a dishonest Executive and that his highest pride will be to carry out successfully and economically the great charge entrusted to him. To put the Executive in a legislative strait-jacket would be sure to result in inefficiency and failure.

Inland Waterway Fund

The most important feature of this bill is the creation of an inland waterway fund, to be used both for investigation and construction. The sum of fifty million dollars is by the bill reserved and set aside as such fund, and the President is authorized, whenever the fund is reduced below twenty million dollars, to make up the deficiency by issuing and selling bonds up to the amount of fifty million dollars. Thus the fund is always kept full, even though Congress should fail to make appropriations. The President is authorized to have examinations and surveys made for the development of the inland waterways of the country and for the connection of such rivers with each other, or with the Great Lakes, by connecting and by coastal canals. In order to enable the President to make such examination and to enter upon works found to be practicable, he is authorized to appoint an inland waterways commission, and to bring in co-ordination therewith the scientific services of the country, such as the Corps of Engineers of the Army, the Bureau of Soils, the Forest Service, the Reclamation service, and the Bureau of Corporations; and to appoint such experts and boards in connection therewith as he shall deem advisable; and to fix their salaries until the same are fixed by Congress. The commission is required to make reports to the President and to Congress, or to either body of Congress, whenever information is required.

Construction

The next question is as to construction. Under this bill, the President is authorized, whenever a project is determined by the commission to be feasible, to enter upon the immediate construction of the works and to let contracts for the execution of the same, in whole or in part; the only limit upon his power being that the necessary money for the payment of the contracts must be in the waterway fund when any such contracts are let.

It will be observed that the initiative, both as to examination and as to actual construction, is put in the hands of the Executive Department as an administrative matter. It is clear that the judgment of a board of experts will be very much better than that of Congress upon such matters, and that much delay and confusion will be saved by authorizing the prompt initiation of the work. Otherwise, we shall have difference of view, both in committees and in Congress itself, as to the details of the work, as to the relative importance of the projects, and sectional differences will arise, only to be compromised by concessions harmful to this great movement. Congress should exercise the fullest power of examination and of criticism, and, of course, it has the power at any time to change the organization or to stop the work. All these powers should be exercised whenever wise and necessary; but the main purpose of the bill is to enter upon the work in a business-like way, just as a private corporation would do, and not to impair its proper administration by unnecessary legislative restraints, or by the breaks and interruptions in the continuity of the work which have proven so disastrous heretofore when Congress has failed to continue to make the necessary appropriations.

The bill also provides for co-operation with states, municipalities, communities, corporations, and individuals with reference to such collateral works as have been suggested, and for an equitable distribution of the costs and benefits. Wherever practicable, compensation to the fund is to be secured by the conveyance of reclamation rights, the lease of water power, and such other means as may be beneficial to the states, municipalities, communities, corporations, or individuals affected. Equitable apportionment of the work among the several waterway systems of the country is also enjoined by the bill. It is intended that work shall be commenced contemporaneously among the different systems of the country, so that no section may feel that another section is being favored at its expense. The bill is tentative in its nature and designed to provoke discussion and to aid in the framing of a more perfect measure.

After Construction, What?

After these waterways are developed they must, of course, be freely used by the people; but their use will necessarily involve the creation of common carriers under laws either national or state. The business of common carriers is not, in these days, engaged in by individuals; the creation of artificial beings called corporations is necessary for this purpose. It is clear that the transportation of these waterway carriers will be interstate and foreign, and therefore subject to national regulation and control. The nation should itself create these corporations, and it should supervise their capitalization, control their profits, and make them the obedient servants of the people. At the same time it should protect them against the destructive competition of the railways. The nation ought not to allow one public servant (the railway company) to destroy another public servant (the waterway company), both engaged in conducting traffic on the public highways of the country. It might, in order to encourage the operations of the waterway companies, exempt them for a period, as national instrumentalities, from taxation either national or state. These questions should be taken hold of at the start with a strong hand and the organization of the water carriers should not be left to the laws of the different states. We should not drift into confusion on this subject as we have regarding our railways.

National Incorporation of Carriers

The demand for national action as to water transportation will lead to national action regarding rail transportation and finally necessitate the creation by the nation of the corporations which are to handle both classes of traffic. We must begin to realize that three-fourths of the transportation of the country is now interstate; that our railroad systems are being operated regardless of state lines; that regulation by the individual states operating here and there on the sections of these great systems lying within their boundaries is disjointed, illusive, and illogical; that complexity, confusion, and insecurity, both to investors and shippers, are the results of the present system.

The truth is, we have not yet begun to think or act scientifically on this subject, but have allowed ourselves to drift, and the present railway system in this country may be called an accidental growth. The first railroads were built from a point in one state to another point in the same state, and their commerce was at first purely state commerce; but the railroad corporations, at first organized for the transportation of state commerce, gradually developed into great interstate systems, composed of many railroads combined under the laws of a single state, and that, oftentimes, a state entirely foreign to the region in which the system operates. In this way, six thousand railroad companies gradually came into existence, of which less than two thousand are now operating roads, the others having been merged into them; and of these two thousand, almost the entire mileage—at least 170,000 out of a total of 220,000 miles—is merged in eight or ten great systems, each controlling from ten to fifteen thousand miles of track and operating in from ten to fifteen different states. So that the growth which began as a purely state growth became, by a process of evolution, a national growth; and it is no longer a question whether the railroads shall be nationalized—for they long ago nationalized themselves,—but merely a question whether we shall continue to permit the lesser sovereignties to assume the function which the nation has neglected of creating its own agents for the transportation of interstate and foreign commerce.

The National Powers

We cannot take the broad view of the powers of the national government as relating to waterways and carriers by water and refuse to recognize those powers as relating to railways and carriers by rail. It is curious how united public sentiment is as to the national control of the waterways and how divided it seems to be as to a similar control of the railways.

We have now forty-six sovereign states, each absolutely sovereign in all matters of local legislation, and each absolutely subject to another sovereign, the Union of the States, as to all matters entrusted by the Constitution to that Union. The main purposes of creating this sovereignty called the United States, were two: The national defense, and the regulation of interstate and foreign commerce. The regulation of interstate and foreign commerce involves necessarily the selection of the instrumentalities of that commerce, and necessarily, also, the selection of the public servants that are to engage in such transportation. The nation should itself create the great corporations which are to engage in interstate transportation by both water and rail. The reason the nation should frame the incorporation act under which great mergers are to be made is that we must prevent over-capitalization and we must limit their profits. If the nation is to permit a state to create the public agents which are to do the nation's business, it should control the legislation of that state; and that, of course, is neither desirable nor possible.

The purpose of the constitution was not to centralize government, but to unionize government, where the general welfare was affected. We unionized the quarantine, because we realized that disease had no respect for state lines; we unionized irrigation, because nature failed to place the rivers entirely within state boundaries; we unionized banking, because the interest of the entire people required one money, a common denominator acceptable everywhere, and a system of exchange inviting universal confidence. And all the reasons which led to the unionizing of these functions of government in the past exist in far greater and stronger degree, at this time, with reference to the unionizing of the subject of transportation. We have just reached the threshold of this great question, and it is very important that we shall start right by the nation's creating its own public agents, and not permitting an inferior sovereignty to do so.

Mergers Necessary

We should drop excitement, reprisal, and retaliation, and get down to the question whether these mergers shall be broken up and resolved into their original elements of purely state railroads, or whether consolidation, properly controlled, shall be permitted. I think all thoughtful men will agree that the mergers of the railways are necessary to the proper development of the transportation system of the country, and that the fullest powers of combination should be exercised, under proper restraint as to capitalization, rates, and profits. To break up these mergers and resolve them into their integral parts, bounded and circumscribed in their operations by state lines, would be a national calamity, if it could be done, as grievous to the public as to the railroads. Leaving out of consideration, for the present, the combination of competing lines, these mergers have been of immense service to the country, although the machinery for bringing them about has been most complicated. The thing complained of is not the fact of combination, but the methods of combination, unrestrained by adequate laws and fruitful of over-capitalization, frauds on stockholders and frauds on shippers.

It is a universal experience that whenever the laws of a country do not meet its economic requirements the people will violate the laws or evade them. That is what has occurred in the case of the railroads. The ingenuity of all the corporation lawyers of the country has been exercised in order to promote the combination of single roads into systems. Although these combinations were absolutely essential to the best development of the country, the railroads were obliged, in order to accomplish them, to evade the laws. This is as much responsible for the spirit of lawlessness in the management of the transportation interests of the country as any other one thing; and I am sure that, if this condition exists (and I fear we must all admit that it does), we, the lawmakers cannot escape our share of responsibility.

The railway is merely the agent of the government—the agent of the state as to purely state commerce and the agent of the nation as to interstate and foreign commerce; and the government has the power to fix the compensation, in the shape of rates on freight or the rate of dividend which the agent shall receive on his investment. It can fix this compensation in the form of tolls, or it can fix it in gross, and all that it must avoid is legislation of a confiscatory nature. I think, therefore, the reasoning is conclusive that, inasmuch as the state can legislate only for state commerce, it cannot legislate and ought not to attempt to legislate upon this great question of merger, which is only entered upon for the purpose of promoting interstate and foreign commerce; but that this can only be wisely accomplished by the action of the Congress of the United States, in which every state in the Union is represented, and in which every citizen has a voice and vote.

I am more and more impressed with the importance of the whole problem and with the necessity of preparing a broad and comprehensive plan for the improvement of our waterways and also for their co-ordination with the railway system of the country. Such a system of waterways, involving ultimately the highest development of forestry, of irrigation, of swamp land reclamation, of clarification of streams, and of bank protection as efficient means of maintaining a channel for navigation, would relieve vastly the existing congestion of transportation. The perfection of the transportation system of the country will, in my judgment, involve the creation by the nation of common carriers which will own not only great trunk lines of railway, but also lines of steamers on the lakes, the rivers, and the ocean. Combination is an essential part of the economic development of transportation. A perfect system involves, as far as possible, one control from shipper to consignee; and this can only be accomplished by great transportation lines operating regardless of state or national boundaries, which will utilize the railways, the rivers, and the ocean, by methods of carriage adapted to each.

A Comprehensive Measure

It is with such considerations in view, and for the purpose of effectually co-ordinating the transportation interests of the country, both waterway and railway, that I have introduced in the present Congress another measure known as Senate Bill No. 499. In framing this act, I have not urged the national incorporation of all railways, many of which lie entirely within the boundaries of a single state, but confine it simply to the construction of interstate railroads and to the combination of interstate railroads, already constructed, into great systems. As to existing roads, this can only be done with the acquiescence of the states. Some states might attempt to withhold their consent, but they would, in my opinion, soon yield when they found themselves outstripped by their more obliging neighbors. There are other ways of proceeding, but I should prefer persuasion to anything savoring of force; and when I speak of force, I do not, of course, mean actual coercion or the violation of the sovereignty of any state, but the prevention, for instance, of any corporation not under national charter from engaging in interstate transportation—a course unquestionably within the power of the nation.

The bill provides for the incorporation, under national law, of carriers, whether by rail or by water, engaged in interstate and foreign transportation, with a provision for the acquisition, with the consent of the states affected, of state-incorporated roads now in existence. The Interstate Commerce Commission is given full control over the capitalization, rates, dividends, and other incidents of the operation of such corporations. When promoters desire to construct a new line of interstate railroad, or to combine old lines into one system, they will be brought before this body of the highest intelligence, character, and efficiency, and present their plan; the amount of bonds they are to issue and the rate of interest, the amount of preferred stock and the rate of interest, the amount of common stock and the rate of interest, and the expenses of promotion; and, upon the approval of the commission, the consent of the nation will be given only after the most careful scrutiny and consideration and the genuineness of the whole transaction viséd by the government itself.

The bill also lays down a uniform method of taxation by the states, and one per cent of the gross receipts is set aside annually as a special fund in the treasury of the United States for an insurance fund to the employees of the railroads against accident and liability. Dividends in any one year are limited to 7 per cent, except with the consent of the Interstate Commerce Commission, and any surplus goes to the betterment of the roads, or to a guaranty fund against future inadequacy of earnings for dividends, or to extra dividends if the commission consents. In fixing rates and dividends, the Interstate Commerce Commission are directed to have regard, as far as possible, to the maintenance of the par value of the stock. There is a provision for the Interstate Commerce Commission to act as a board of conciliation in the settlement of disputes between the railroads and their employees, on questions of hours, and of conditions and compensation of labor. It is stipulated that there shall be no interference with the local police regulations of the states, or with their regulation of purely state traffic, or with the jurisdiction of the state courts.

We welcome, therefore, the national consideration of all these questions relating to the inland waterways, because it opens up the greater question of transportation, regardless of state lines, by both rail and water, and because its very consideration will bring about a fuller exercise of the granted powers of the constitution. It seems to me peculiarly fortunate that this question of the improvement of the inland waterways has come up and arrested public attention as it has done, because, once public opinion is created, legislation will speedily follow. The whole question of transportation in all its branches will be opened up and intelligently discussed, and we may be able to incorporate in our legislation regarding the waterways some much needed legislation relating to the national incorporation of carriers whether by water or rail or both, and thus weaken the opposition of those who would prevent the co-ordination of the whole matter comprehensively, by indicating to them that the national powers regarding interstate and foreign transportation will not be exercised piecemeal or with reference to the one class of transportation and not with reference to the other.

If a proper system were created, most of the evils now complained of would disappear. A system of transportation could be easily devised which would enlist the best powers of the national government without infringing at all upon the powers of the states —one which would protect alike the railway investor, the railway employee, the shipper and the public in their respective rights, and at the same time protect the states in all their legitimate powers, and change the hostility of the railways toward the waterways into friendliness and co-operation, in the interest of the entire people.

THE DELAWARE RIVER

By Hon. J. Hampton Moore,
Member of Congress, Third District, Pennsylvania, and President Atlantic Deeper Waterways Association.

The Delaware River is a great waterway which, one hundred years ago, furnished ample means of communication between the chief commercial city in America and the sea. Upon the banks of the Delaware were erected the great shipyards of the country. In colonial days, during the Revolutionary War, after the nation had been founded, and since that time, to and including the present day, the Delaware has been the American Clyde, and although commerce has been largely diverted to other ports than Philadelphia, the Delaware has remained the shipbuilding center of the Atlantic seaboard. But it has not continued to furnish ample means of communication between Philadelphia and the sea. That has been one of the reasons (but only one) why commerce has been diverted to other ports. When the ships of commerce drew no more than eighteen or twenty feet of water, they could reach the docks of Philadelphia through the natural waterway almost as readily as they could reach the docks of New York, but when the draft of merchant ships was increased to twenty-five, or thirty-five feet, shoals in the Delaware prevented access to the port at low tide and resultant delays compelled the larger and more economical ships to trade at ports where fewer obstructions were encountered.

Attempts have been made to remove the obstructions, thus restoring the conditions of equal competition under which Philadelphia was for a time the leading commercial city of the country, but in their results they have not kept pace with the growth in the size of merchant ships. The 30-foot channel in the Delaware is to be completed in June, 1908, but there is already urgent need for a 35-foot channel and before that can be completed a 40-foot channel will probably be required owing to the increase in the draft of vessels. The national government has done a great deal towards the improvement of the Delaware

River. Pennsylvania and Philadelphia have liberally supplemented the work of the Federal authorities, and yet much remains to be accomplished.

The importance of the work is not to be measured by the commercial interests of Philadelphia. The deeper channel is needed not only for the purposes of commerce, but to enable the great shipyards on the Delaware to send their products to the sea and to make available to the modern American battleship the greatest fresh-water naval station, dry dock, and repair shop on the Atlantic coast. The nation's interest in the improvement of the Delaware is superior to that of the City of Philadelphia, and will become a controlling interest if the deep waterway project should result in the construction of an interior line for the movement of battleships along the coast—a project of which the Delaware River will be the most important link.

Starting with the Delaware River as an adequate means of communication between Philadelphia and the sea, as it was a century ago, and indeed down to about 1850, let us see what has been done to improve it in order to keep measurable pace with the demands of commerce. The head of navigation is at Trenton, where natural falls limit the tidal flow. The river there is very shallow and no considerable depth is found north of Philadelphia. In front of the city there were flat islands which diverted the channel. From the city southward to deep water in the bay, bars, flats and rocky ledges obstructed the channel to some extent for considerable stretches, but even at these points the depth at mean low water was from seventeen to twenty feet, so that no great need for dredging operations appeared until after the Civil War. Here, as elsewhere, prior to 1867, few attempts were made to improve natural waterways except to meet local demands, and as a consequence the first efforts to improve the Delaware River were made on the river above Philadelphia. As early as 1836 the United States Government expended $15,000 in making a channel through Perriwig bar, where the depth of water was originally only three to six feet. The next appropriations (1872 and 1873) were also for improvements in the upper Delaware where depths of only eight to nine feet have been obtained. Attention was then turned to the lower Delaware, and a little work was done each year, but a quarter of a century elapsed before appropriations were made large enough to do much more than maintain the natural channel.

In 1885 a board was convened to prepare plans for a channel from Philadelphia to the sea 600 feet wide and 26 feet deep; and in 1899 another board was appointed "to revise the plans for improving the Delaware from Trenton to its mouth." Several other boards have been convened to pass upon particular problems, and the work has been in charge of a dozen different engineers in the course of thirty-seven years. It is quite natural that under such administration, mistakes should have been made, plans changed, costly work sacrificed and less good accomplished than was expected. This was not necessarily the fault of the engineers, who until recent years were always hampered by insufficient appropriations. The Delaware has, nevertheless, been greatly improved. At only two places is there now a less depth than thirty feet at mean low water, and the thirty-foot channel from Philadelphia to the sea will be completed in June, 1908. From 1885 to 1899 all appropriations were applied to the 26-foot project, and since March 3, 1899, all appropriations have been applied to the thirty-foot project.

From 1836 to 1899 less than $2,000,000 had been expended on the improvement of the Delaware, and the results accomplished were the forming of a channel not less than 7½ feet deep between Bordentown and Philadelphia, and of a channel not less than 20 feet deep between Philadelphia and the sea. In March, 1888, a resolution was approved providing for the appointment of a board of engineers to report upon the river between Philadelphia and Camden, and the report of this board led to a very great improvement of the harbor. The report recommended the forming of a deep channel 2,000 feet wide along the city's front at such a distance from the then wharf line as would permit an extension of wharves, and the widening of Delaware avenue. The plan involved the entire removal of Windmill and Smith's Island and their adjacent shoals and the cutting off of a part of Petty's Island. To accomplish this purpose the islands were bought at a cost, including legal expenses, of $708,000, the state paying $200,000, the City of Philadelphia $208,000 and the national government $300,000. A necessary part of the work was the extension of the wharves of Philadelphia and Camden so as to narrow the channel and produce the scour required for its maintenance. The city and the Girard estate greatly aided in this work, which was completely successful and brought about a marked improvement of the river front.

The river and harbor act of March 3, 1899, provided for the formation of a channel 600 feet wide and 30 feet deep to extend from Christian Street wharf, Philadelphia, to deep water in the bay, at an estimated cost of $5,810,000. This marked the beginning of liberal appropriations for the improvement of the Delaware, and the contemplated work is now approaching completion. Besides its appropriations for harbor improvements, the City of Philadelphia has expended $685,000 on improvements of the Delaware River, and in 1905 the State of Pennsylvania and city appropriated sums aggregating $750,000 for dredging operations between Philadelphia and the state line.

The work of dredging undertaken by the city and the state would have been done in time by the Federal Government, but the purpose of city and state appropriations was to expedite the improvements. There was a strong desire to begin work this year on a 35-foot project, and to that end it was proposed that surveys be made at once and plans prepared for the new work. But, following precedent, the river and harbor committee refused to begin a new project until the 30-foot channel should be completed.

The present condition is that a channel 8 to 9 feet in depth has been established between Bordentown and Philadelphia, a channel not less than 26 feet deep along the city front, and a channel 30 feet deep from the lower part of Philadelphia to the sea. Under the 26-foot project the government expended nearly $600,000 for dikes, and under the 30-foot project nearly $1,000,000 for bulkheads. In 1829 work was begun upon the breakwater, and continued until 1898, at which time its cost had reached $615,036. In 1897 the National Harbor of Refuge was begun, and up to 1901 near two and a half million dollars had been expended on this project. In addition to all this, the government has provided an excellent system of lighting the river.

The expenditures by the United States Government on account of improvements to the Delaware River, including the Delaware Breakwater and the Harbor of Refuge, have amounted to nearly $12,000,000. Philadelphia and Pennsylvania have added $1,500,000 to the expenditures for deeper waterways alone. More than one-half of the whole amount has been spent on the 30-foot project, from which it appears that the bulk of the work has been done in the last five years.

The Schuylkill River, the chief tributary of the Delaware, runs through the city and empties into the Delaware at the lower end of the city. It is navigable for only a few miles, but is a stream of great importance to the commerce of the city. League Island, which was presented by the city to the government to be used as a naval station and navy yard, is a large island at the mouth of the Schuylkill. Here the government has spent millions of dollars in reclaiming land, in the construction of work shops, in the building of a great dry dock, recently completed, and in dredging operations. It has treated the Schuylkill, however, as a local stream, except for its own purposes, and the improvement of that river, which is capable of being made an important factor in the commerce of the port, will probably have to be done at the expense of the city and state. The government, however, may aid to keep the mouth of the Schuylkill open for vessels of large draft, for the naval station at League Island is capable of being made one of the finest in the world. It is secure from attack, surrounded by fresh water, and within the limits of a great city which can at any time supply an army of skilled workmen and supplies of all kinds, for making repairs or building ships.

The one defect, the want of a channel to the sea sufficiently deep to float the larger vessels of the navy, will be removed by the completion next year of the 30-foot channel, for the rise of tide in the Delaware is six feet, and by taking advantage of the tides vessels drawing more than thirty feet can reach the city. In time of peace, naval vessels can afford to wait for the tide, but there are few that cannot now reach League Island at any stage of water. It is, of course, desirable that the channel should be further deepened, first to thirty-five feet and then to forty, because merchant ships cannot afford to be delayed; but for uses of the navy, the Delaware now meets ordinary requirements.

As a link in the chain of deep water ways from Boston to Beaufort, the Delaware is of first importance. Its 30-foot channel from Philadelphia to deep water in Delaware Bay will be ample until other links in the chain have been completed and by that time it will have been further deepened. The proposed Delaware and Chesapeake ship canal will at once put Philadelphia in communication with numerous important points on Chesapeake Bay and its tributaries. The extension northward to Raritan Bay involves not only the building of a ship canal, but extensive improvements in the river itself, for the channel north of Philadelphia is only nine feet deep the greater part of the way to Bordentown. Southward from Philadelphia to whatever point may be selected as the outlet to the Delaware and Chesapeake Canal, the Delaware River is already an ample water way for the purposes of the proposed continuous inland route. The immediate demand is for the completion of the 30-foot channel from Philadelphia to the sea; then for a survey for thirty-five feet which is necessary to accommodate vessels of increased draft. The 30-foot channel is now assured, and it is believed that an awakened public sentiment will soon induce Congress to grant the survey for the additional five feet. All signs point to an improvement in the conditions surrounding the Delaware River. New Jersey, Pennsylvania and Delaware are aroused to the importance of developing the stream for enlarged navigation, and the naval authorities are interested because of the great public value and strategic importance of the fresh water repair station at League Island.

ENGINEERING FEATURES OF CHESAPEAKE AND DELAWARE, AND NORFOLK-BEAUFORT WATERWAYS[1]

By Major C. A. F. Flagler,
Corps of Engineers, U. S. Army.

The waterway from Boston to Beaufort Inlet has many links partially constructed: the Cape Cod Canal, the Delaware and Raritan Canal, the Chesapeake and Delaware Canal, the Dismal Swamp and Albemarle and Chesapeake canals paralleling each other, and the Core Creek cut now being made by the government from Beaufort Harbor to Pamlico Sound. All of these, however, are for a generally shallow draft commerce, ten feet at low water being about the prevailing depth. They are what may be termed barge canals. The great Atlantic waterways that we are discussing include this inland chain of artificial channels and also great natural channels such as Long Island Sound, the Delaware and Chesapeake bays. All of these large natural waters are being made navigable by the general government for ships of the largest draft and the connecting artificial channels should offer in the near future equal advantages. There should be no weak links in the chain.

The Two Waterways

The Norfolk-Beaufort waterway has its southern terminus at Beaufort Inlet, N. C., passes by a land cut, utilizing Core Creek, into the waters of Pamlico Sound, thence through Croatan Sound it passes into and crosses Albemarle Sound, and thence, utilizing small sounds and rivers, it passes into Norfolk Harbor through the Elizabeth River. Funds were partially appropriated in the last river and harbor act of Congress, and work is now in progress on the southern end of the waterway. This waterway is intended only for light draft traffic, mainly towed barges. Its main advantages are, that it opens up to water transportation the productive section of eastern North Carolina, and offers a safe inland passage for the smaller coastwise boats by dangerous Cape Hatteras. The two private canals referred to, the Dismal Swamp Canal and the Albemarle and Cheasapeake Canal, now furnish light draft channels from Norfolk Harbor into Albemarle Sound.

---

[1] A paper read before the Atlantic Deeper Waterways Conference, Philadelphia, November 19, 1907.

The Chesapeake and Delaware Canal route reported upon to Congress is that of the present Chesapeake and Delaware Canal, from Delaware City, Delaware, to Chesapeake City, Maryland. This route has been carefully surveyed and investigated by borings, and estimates submitted for ship channels of thirty-five and thirty-foot depths. These deeper canals lengthen the present artificial waterway by several miles of channel which must be dredged on the shallow foreshore of the Delaware River, and in the waters of Back Creek, Elk River, and Chesapeake Bay.

The Terrene

The country in which these waterways lie is practically of the same formation from northern New Jersey to any point on the South Atlantic coast that may be selected for an ocean terminus. The terrene is the great Atlantic coast plain about 100 miles wide, measured inland from the shore and extending out under the ocean for fifty to one hundred miles to the edge of the Continental plateau. It consists of rock of the tertiary period covered from thirty to two hundred feet deep with glacial drift, and broken at intervals by the deep gorges that were once the beds of the great glaciers of the Delaware, the Susquehanna, the Hudson, and others. Along the ocean shores this soil is supplemented by the sand brought down by wave action from the rocks of older geologic formation abutting on the coast in New England, Nova Scotia, Newfoundland and Labrador. All of this drift and sand is easily moved and molded by the forces of nature. The shore line is universally of sand, and generally the ocean shore is merely a narrow cordon of sand separating the ocean from the chain of inland waters. At places, this cordon is in two or even three distinct lines. I am indebted to a paper by Major Cassius E. Gillette[2] for the following theory of the formation of these cordons, given only in part:

> The sand driven shoreward (by the waves) up the gentle slope of the Atlantic Continental shelf gradually formed itself into an under water ridge parallel to the shore line. As it approached the surface, it was washed down by the ebb tide. This washing was irregular as to amount and location, and ultimately the tidal escape was through low places, gradually washed deeper while the waves, unopposed, built the intervening stretches into sand islands, and the low places became entrances into sounds or bays.

[2] Sea Coast Harbors in the U. S., International Engineering Congress, St. Louis, 1904.

A shore formed in this way naturally enclosed only shallow lagoons; but some of these, of large extent, eventually by wave and tidal action in their own areas, produced the deeps and shallows that we now find.

The Engineering Features

From Beaufort to Norfolk and from the Chesapeake to the Delaware, waterways must be located in this low-lying coastal plain, with its shallow streams and broad sheets of water. The question of construction of a waterway presents as its first and most difficult feature, the choice of route. There are so many offering nearly equal advantages, or equally balanced advantages and disadvantages, that it is difficult to reduce even the more obvious to a reasonable number for careful consideration. On the Norfolk-Beaufort route the waterway was divided for consideration into three divisions, and it was deemed absolutely necessary to examine carefully five routes in the first division, six in the second, and two in the third. From the Chesapeake to the Delaware, nine routes have been carefully considered. For both waterways many other routes have been proposed and considered, but not examined. On the Beaufort-Norfolk waterway the decision is rendered more difficult by the question of depth—some routes offering greater advantages for a ten or twelve-foot depth which disappear when a sixteen-foot depth is considered—these being the three depths that have been reported to Congress with definite estimates. It is probable that the best routes for these depths would yield in parts to other routes were a thirty-five foot ship canal contemplated. The great present demand for canals, to become greater in the future, will eventually require large ship canals along all the sections of the great route we are discussing as a whole. It is the part of foresight and economy that each route should be located with a view to the construction of a channel for the largest commercial ships. If channels of such dimensions are not needed at present or funds are not available for their construction, let the modest canal barge be constructed, of twelve to sixteen-foot depth; but with every provision made in the acquisition of land and the location of route to permit its future enlargement to meet any commercial demand that may arise. The projects for both of these waterways contain no provision for locks, and the expensive work of reconstructing locks of larger size will not militate against enlargement of the waterways at any time by any increment, large or small.

The construction along both routes, of either a shallow barge canal or of a deep draft ship canal, is entirely feasible. The geologic formation is such as to offer variety of material: hard sands and gravels, marsh land, upland soils, decomposed peaty strata and the real quicksand. No rock is anticipated along these two routes. The project for both canals is for tide-level canals, eliminating the many problems arising with summit canals, in the arrangements needed for water supply and for avoidance of interference with local streams and drainage. Excavation by well-known engineering methods in both land and water cuts will constitute the bulk of the work. A troublesome quicksand on the Chesapeake and Delaware Canal, 7,000 feet long and forty feet thick, will offer interesting, but not difficult, study for its passage. Sliding side banks in one locality present difficulties to overcome. Permanent organization of plant and personnel must be considered and provided to meet the necessary work in the maintenance of channel depths and widths after completion, the removal of ice, the lighting and policing of the canal, and the repairs of banks, revetments and appurtenances. All of these have been carefully considered in the projects and estimates for these waterways, but their details, while of technical interest to the engineer, have no place in such a conference as ours.

In the further prosecution of the construction of the waterways along the route, and in discussion relative thereto, there are two obstructive and misleading engineering fallacies that will be certain to play a part on these canals as they have on those of the past.

Land and Water Cuts

A glance at the geography of our Atlantic coast shows an almost continuous line of bays, sounds, lakes, rivers and creeks paralleling the shore of the ocean from Florida to Cape Cod. It would appear at first sight that the excavation of a channel across the short intervals of land separating the links of the chain would create a magnificent waterway for commerce. This is not true: most of the stretches of water that we see on the map are so shallow that the excavation of channels is as much needed in them as through the land; and, furthermore, which is the point I wish to bring out, channels dredged in bodies of shallow water are frequently more expensive than through land cuts, especially along this route. "All is not gold that glitters," and similarly, from a commercial and engineering standpoint, all is not water that is printed blue on the map. The land along most of the territory to be traversed by our route is low-lying marsh in which excavation is easy. It is frequently land of little or no value. (In my present district, which comprises part of five states, some thirty or more such cuts have been made, and all land required has been deeded to the United States free of cost.) Disposition of dredged material becomes simplified in land cuts, as it can be easily placed ashore where it will not return to the constructed channel, and the deposit of silt in such a channel will be only that washed from the channel itself, giving a minimum for annual maintenance of the channel.

On the other hand, a channel across a wide wind-swept area of shallow water with irregular tides and currents flowing across the line of channel, presents many difficulties not present in the land cuts. While the excavation in dredging may be less, the material dredged cannot usually be placed along the sides of the artificial channel, as a large portion of it would, in all likelihood, return to the channel. It must, therefore, be frequently towed long distances to a suitable dumping ground, and frequently pumped ashore from an artificial dumping basin by means of additional and costly plant. Still more important, the exposure of these channels to wave and current action makes their navigation difficult and their maintenance costly. In the higher latitudes these open channels are also rendered difficult and dangerous to navigation owing to the cross passage of large fields of moving ice during the winter season. The method of handling boats out of Baltimore through an open channel affected by ice fields will show the difficulties arising. I quote from a report of the war department:

> The experience of ice boats in Baltimore Harbor and the approaches thereto is very interesting and instructive. Within the harbor the ice formed in place constituted what is known as still ice. The traffic of the port and the passage of the ice boat through keep an open channel, the navigation of which presents no difficulty. The ice being "still" a channel or passage broken through it remains stationary in position. This is the state of the case until a point between North Point and the Seven Foot Knoll is reached. Here the ice is a drifting field. A channel way being broken through it drifts with the field. Therefore a passage broken through thi

> field and over the deep-dredged channel immediately moves off this channel, and in a short space of time, the work must again be gone over before any vessels can pass along the dredged way. * * * When ice is thus drifting, the method of procedure is the following: One or more vessels desiring to proceed to sea are towed by a tug boat and convoyed by the ice boat which precedes the tow. To allow for the drifting of the broken passage through the ice, the ice boat works not over the dredged cut but on the side from which the ice is drifting. The tow being at a proper distance behind can move along the dredged channel as the ice cut is passing over it.

These statements will, I think, show you that occasionally the land cut is more economical in construction, and still more frequently in maintenance. Generally the natural bodies of water offer the cheapest and best route, but the economy resulting from occasional resort to land cuts even paralleling such bodies of water should not be lost to sight, and not ridiculed when suggested.

Tide-Locks

The second fallacy is more dangerous and far-reaching than the first. It is the well-known tendency to consider tide-locks necessary on all tide-level canals to prevent dangerous flow in the canals due to the rise and fall of the tide. This tendency is not confined to the lay mind, but extends to many of our most celebrated hydraulic engineers. President Shonts, of the Isthmian Canal Commission, when the discussion of a tide-level or high-level canal was under consideration, was widely quoted as saying that "one lock (tide) being a necessity, the addition of four others becomes less objectionable." Was one lock a necessity if a tide-level canal had been decided upon? Many of our best engineers think not. During the French régime on the canal, a study of the subject by the most thorough students of the hydraulics of the canal in France, led to reports that it was not necessary, founded on careful calculation and investigation; and these reports were concurred in by the French Academy in 1887. Mr. Clemens Herschel,[3] one of the most noted of our hydraulic engineers, in an article questioning the necessity for a lock on a tide-level canal at Panama, says: "The idea of the Suez Canal was denounced by leading engineers of the day as an impossible work if built without a tide-lock, and held up to the scorn and ridicule of men by these same engineers and by some of the greatest statesmen of that period, as a bubble

[3] Engineering News, March 22, 1906.

scheme, sure to bring ruin to who would support it. . . . . Now, fifty years later, it is paying $17,000,000 annually to its stockholders, and a proposition to put a lock into it would be regarded as the suggestion of a maniac." The construction of the lockless canal of Corinth was delayed over 2,000 years after it was first projected owing to this same fallacy. It is now navigated with ease. An expensive tide-lock was put in the Albemarle and Chesapeake Canal, in Virginia, because a difference of level of eleven feet sometimes existed between the water at the ends of the canal, eighteen miles long. The lock is seldom closed, and then only to prevent erosion of the banks, which could have been easily met by revetment.

I think I can explain in a few words the cause of the existence of this fallacy. Difference of water level at two ends of an open waterway always causes flow, which increases as a direct function of the height. If the difference is constant, the flow is constant, and may be easily computed. Where the differences at both ends are caused by tides, the resultant difference is a constantly varying one. The head of water is rapidly changing, while the velocity engendered by it is slowly coming into life, retarded by friction and inertia. Long before a velocity equals that caused by the extreme tidal head, it is beginning to fail from a reversal of the tidal conditions. It results that currents thus engendered by constantly varying tidal heads never reach or even approach nearly the velocities corresponding to constant heads, equal to the tidal differences. Intricate formulæ, generally empirical, have been devised for making computations of velocities in these cases, but they are, I regret to say, little studied by many who should understand their use, and excessive currents are frequently predicted which have been computed for static heads. To prevent delays to vessels passing through canals, the banks should be revetted sufficiently to permit a fair rate of speed of the vessels without injury to the banks. Any current that an ordinary vessel can stem will not injure banks that permit a rate of five knots to passing vessels. Great difference of tidal levels at the ends of short open canals does in some cases require tide-locks, but these great differences do not exist in the waterways under consideration.

Pardon my digressing here to say, for fear of being misquoted, that I have always regarded a high-level lock canal as the best type at the Isthmus of Panama, but for reasons not pertinent to this paper, and certainly not to avoid tide-locks.

Locks are, of course, necessary where a constant difference of level exists of considerable height between the ends of a canal to permit safe navigation, and they are frequently used for economical reasons to pass a high summit level, even when the ends of the canal may be practically at the same level. The Delaware and Raritan Canal doubtless requires consideration on these points but it is my positive and carefully considered belief that no lock of any description will be required in any part of the chain of waterways from New Jersey to the Carolinas. There may be many present who disagree with me on these points, but I ask you all, in considering future references to this waterway in the press or elsewhere, to take with a grain of salt any statement made as to the absurdity of land cuts paralleling bodies of water, or the necessity for locks on a tide-level canal.

Conclusion

There remains only for me to say that there is nothing, from an engineering standpoint, to prevent the construction of a ship canal from Beaufort, N. C., to Norfolk, Va., and across the peninsula of Delaware and Maryland. The same is doubtless true of other portions of the great Atlantic waterway, and the engineering talent of the country awaits only the provision of the necessary funds, whether from the national government or from private or corporate sources, to place at the service of the country's commerce this most magnificent highway.

CAPE COD CANAL[1]

By Wm. Barclay Parsons, C. E.,
New York.

In the consideration of an inside water route along the Atlantic seaboard of the United States, the link that will connect the waters of Long Island Sound and Massachusetts Bay is, in respect of size and character of vessels and the extent of tonnage that will use it, the most important, and historically the most interesting of all the sections that, when completed, will make possible a voyage from Maine to the Gulf of Mexico free from interference by stress of weather or attack by enemy in case of war.

A glance at the map of Massachusetts shows projecting from its southeastern corner a great arm, running first easterly thirty-five miles and then northerly about the same distance, terminating in a hook at Provincetown. To this arm the name of Cape Cod is applied. This curious geographical formation is everywhere flat, with few hills, especially to the east, and is composed chiefly of sand and gravel. Around this cape all sea-going traffic between Massachusetts Bay ports, such as Boston and Portland, and all ports lying to the south must pass.

The circumnavigation of the cape is far from easy. On the south side lie Martha's Vineyard and Nantucket Islands, inclosing Vineyard and Nantucket Sounds, with their high tidal currents and many shoals; while to the east are the great shoals extending southeasterly to the celebrated Nantucket shoals, marked by the light vessel of that name. These shoals, the low, sandy coast, difficult to see in thick weather, the frequent fogs, and the unbroken exposure to northeast storms, have made the passage of the cape a dreaded one to all mariners, and the record of wrecks year by year, with their shocking loss of ships, cargoes and life, is ample testimony that their fears do not lack foundation.

The only place on the cape where its breadth is material is the southerly projection towards Falmouth, which, with the extended chain of islands, forms the eastern shore of Buzzards Bay.

---

[1] This paper was read before the Atlantic Deeper Waterways Conference, Philadelphia, November 19, 1907.

At the head of the bay the distance overland to Barnstable Bay is less than eight miles. This distance is made up in chief part by the Monument River to the south and the Scusset River to the north. Separating them is a ridge whose height is only thirty feet above sea level. The deepening of the rivers and the cutting of a canal through this ridge, making thereby a direct water route, avoiding the journey around the cape, is so obvious a shortening of distance and reduction of marine risks as to cause wonder it was not long since done. The contemplation of such a channel is, in fact, almost coeval with the Pilgrim settlement at Plymouth in 1620. The records of that colony show that in 1622 a party succeeded in getting a boat around the cape, only to have it lost in Vineyard Sound. The year following they discovered that from Manomet, an Indian town within twenty miles of Plymouth, there flowed a river southerly to a bay which opened towards Narragansett, and within a short time afterwards the thrifty colonists established there a trading station, between which and the Dutch settlement at Fort Amsterdam there at once developed a brisk trade, the Dutch vessels ascending the river to Manomet, whence the goods were carried the short remaining distance overland to Massachusetts Bay. Before the seventeenth century was one-third gone there was thus established the beginning of the Boston-New York water-borne trade, which has since grown to such huge proportions. The old name of Manomet has unfortunately been corrupted into the meaningless form of Monument, and as such is now applied to the river which the Plymouth colonists found.

The idea of extending this river not over two miles to the north so as to make a continuous waterway and dispense with a land portage must have soon occurred to the traders. At least no later than 1676 one Samuel Sewall records in his diary, under date of October 26th: "Mr. Smith, of Sandwich, rode with me and showed me the place which some had thought to cut, for to make a passage from the south sea to the north."

Officially, however, things moved slowly then, as they do now, and it is not until 1697, or seventy years after the arrival of the Dutch vessel from New Amsterdam, that the authorities' attention seems to have been drawn to it. In that year the records of October 30th, of the House of Representatives, contain the following resolution:

> Whereas, It is thought by many to be very necessary for the preservation of man and estates, and very profitable and useful to the public, if a passage be cut through the land at Sandwich from Barnstable Bay, so called, into Monament Bay, for vessels to pass to and from the western part of this country,
>
> *Ordered,* That Mr. Hohn Otis, of Barnstable, Captain William Bassett and Mr. Thomas Smith, of Sandwich, be and are hereby appointed to view the place, and make report to this Court, at their next sessions, what they judge will be the General Conveniences and inconveniences that may accrue thereby, and what the charge of the same may be, and probability of effecting thereof.

So far as the records give evidence, these citizens have not yet reported. In fact, as to any action by the Colony of Massachusetts, the matter lay dormant until May, 1776, when the General Court passed this resolve:

> *In Council.* Whereas, It is represented to this Court that a navigable canal may without much difficulty be cut through the isthmus which separates Buzzards Bay and Barnstable Bay, whereby the Hazardous Navigation round Cape Cod, both on account of the shoals and enemy, may be prevented, and a safe communication between this colony and the southern colonies be so far secured,
>
> *Resolved,* That James Bowdoin and William Sever, Esqrs., with such as the Hon. House shall join, or the major part of them, be a committee to repair to the town of Sandwich, and view the premises, and report whether the cutting of a canal as aforesaid be practicable or not. And they are hereby authorized to employ any necessary surveyors and assistants for that purpose.

As a result of this resolution a committee was appointed, and apparently for the first time proceeded on scientific lines by appointing an engineer, Mr. Thomas Machin. Mr. Machin at once began a survey, but the year 1776 being an important one in the annals not only of the Colony of Massachusetts but of other colonies as well, Mr. Machin was withdrawn in June of the same year by an army officer giving more concern to making a country rather than a canal, one George Washington, who wrote to the chairman of the committee that, "The great demand we have for engineers in this department has obliged me to order Mr. Machin hither to assist in that branch of the business."

In 1791, Massachusetts having now become a state, the legislature appointed a committee to again inquire into the possibility of a canal across the cape. From that time until 1824 the question was continually before the state legislature. In the latter year the government of the United States intervened, and by a joint resolution of both houses the President of the United States was authorized to cause the necessary surveys, plans and estimates to be made for a canal across the cape. As a result of this survey, detailed plans were finished for a canal which was to be thirty-six feet wide on the bottom, sixty feet wide at the surface of the water, with a depth of eight feet, the canal to be equipped with locks.

The eminent French engineer, Major William Tell Poussin, who visited this country in 1831, and who, on return to France, made an extensive report on public improvements of the United States, describes, with elaborate drawings, the Cape Cod Canal as being one of the greatest pieces of construction contemplated on the American continent. From 1830 to 1860 the project languished, but in the latter year the legislature of the State of Massachusetts once more took it up, reported, and again reported in 1864. From that date until the present the question of the canal has been at intervals under discussion. The state granted a charter under which work was actually begun; funds, however, were not forthcoming in sufficient amount, the work was abandoned, and the charter allowed to lapse. In 1899 the legislature passed another charter, amended in 1900, in accordance with which plans for a canal have been prepared by the writer, submitted to the joint board of railroad and harbor and land commissioners of the State of Massachusetts, approved by them and work begun.

All the early schemes for a canal at this point contemplated locks. Brevet Major-General J. G. Foster, Lieutenant-Colonel of Engineers, U. S. Army, in 1870, was the first to call attention to the fact that, although there is a considerable difference in tidal phenomena at the two ends of the canal, nevertheless the resulting current will not be sufficient to require locks. This same view has been sustained by many eminent authorities, among them the late Colonel A. L. Rives, for many years superintendent and chief engineer of the Panama Railroad; Dr. Elmer L. Corthell, the associate with Captain Eads in the Mississippi jetties, and himself the constructor of many notable harbor developments in various parts of the world, and Mr. Clemens Herschel. The plans that are under construction therefore contemplate a canal free from locks or dams. The law requires that the bottom width shall be not less than 100 feet, with passing places where the bottom width shall be twice as great, and with a minimum depth at any point at mean low water of twenty-five feet. In actual construction it is probable that the minimum width will be greatly exceeded; in fact it is most likely that the passing places, instead of being made three in number, will be connected so that the canal will have everywhere a bottom width of 150 to 200 feet, and a width at the surface of from 250 to 500 feet, depending upon the slope that the banks will take. These dimensions can be compared with a bottom width in the Suez Canal of 147 feet, in the Kaiser Wilhelm Canal at Kiel of 72 feet, and in the Manchester Canal of 120 to 200 feet; the depths of these canals vary from twenty-six to thirty feet.

From the shores of Barnstable Bay to the shores of Buzzards Bay is a distance of eight miles. The sharpest curve is projected to have a radius of 7,640 feet, so that navigation for vessels of any size within the limits of depth will be simple. At the south end Buzzards Bay is land-locked and affords an excellent harbor; at the north end the canal will flow directly into the open waters of Barnstable Bay without any natural protection. This bay is open to storms from the north and northwest. It is proposed, to provide protection against winds coming from this direction, to build a breakwater for a distance of 3,000 feet, running easterly and extending to the six-fathom curve at low water, so that vessels entering from the open bay, even in rough weather, will be able to obtain smooth conditions before entering the canal. In addition, the United States Government should construct a harbor of refuge by the building of other breakwaters, so that vessels, after having passed the canal, may lie at anchor in the waters of Barnstable Bay until such times as they are ready to continue their voyages, if delayed by stress of weather, accident or other cause. Such harbor is so obviously a part of open sea navigation that it logically should be done by the government as similar works are done along the coast, and not by a private company.

This canal is not a channel for local traffic, but is essentially a ship canal for ocean-going vessels in through service. The figures of proposed depth and width of the Cape Cod Canal show that it will be of the same general character as to size as the great ship canals of the world, and the dimensions are amply sufficient to accommodate all vessels engaged in the coastwise traffic at any stage of tide, and permit them to pass each other in opposite directions without hindrance. In fact, the canal will be of really greater capacity than the above figures would indicate, which are based on mean low water conditions. Since the tide rises in Buzzards Bay about five feet, the depth of water in the canal when there is high tide in Buzzards Bay will be thirty feet, a depth that will be substantially maintained at that time through the canal, as mean tide at Sandwich which occurs when there is high tide in Buzzards Bay will also give thirty feet depth at the north end. Available draft can therefore be said to vary from twenty-five feet as the minimum to thirty feet as the ordinary maximum. The latter depth would suffice to carry vessels of the battleship class, should the government ever have occasion to send such vessels through the canal.

The general trend of the Atlantic coast is northeasterly. A straight line drawn from the mouth of the Chesapeake, or the mouth of the Delaware, or from Sandy Hook, to Boston, will cut the land well to the westward of the proposed canal. The actual saving in distance will therefore be the same for any vessel trading between a Massachusetts Bay port and practically any of the ports on the Atlantic seaboard. Vessels now making this journey have two courses open. If going from New York they can pass through Long Island Sound and Vineyard Sound around the cape; or they can go by sea past Sandy Hook, and then from Montauk Point either through Vineyard Sound, as before, or to the southward of Martha's Vineyard and Nantucket Islands around the cape. Vessels from Philadelphia, Baltimore, Newport News, Norfolk, Wilmington, Charleston, Savannah, Brunswick, or any other port, can pass Montauk Point and go either through Vineyard Sound, as above, or to the southerly of the two islands.

Taking a common point of departure by the inside route through Vineyard Sound, there would be a saving in going through the canal of sixty-six miles in distance; or, by taking another common point of departure outside of Montauk Point, there would be a saving of sixty-three to seventy-one miles for vessels going through the canal instead of passing to the south of the islands, according as bad shoals are crossed or avoided. Or, if in the latter case, a vessel should wish to escape all the Nantucket shoals and make a complete circuit rather than go across, there would be a saving of 129 miles between New York and Boston, and 105 between Philadelphia and Boston. For points south of Philadelphia, the saving in distance would be substantially the same, although, as compared with the journey length, necessarily proportionately less. The saving in distance is not, however, the only saving that would be realized, as the worst part of the journey is the journey around the cape, whether it lies across the shoals or goes around them.

Fogs, storms, and adverse currents frequently keep vessels storm-bound either at Provincetown or in Vineyard Sound for days at a time, so that no certain time of arrival can be predicated even for vessels in tow, still less for vessels under sail, while the terrible list of wrecks on the shores of the cape attest the foolhardiness of attempting to make the journey in bad weather. During the year 1905, the last for which statistics are available, fourteen vessels were lost on the shoals and the short stretch of thirty-five miles of Cape Cod coast. The tonnage of these wrecks composed 24.1 per cent, or say one-quarter, of the total tonnage of wrecks reported on the whole coast line of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut and Long Island. So measurable is the danger of Cape Cod transit, as compared with the quiet navigation of Buzzards Bay and the canal, that inquiries addressed to the marine underwriters in New York elicited the response that insurance rates on the cargoes of sailing vesels and barges would be reduced from 10 to 25 per cent to vessels using the canal.

The traffic that would seek the canal route is of three classes:

First. Passenger steamers between New York and Boston. This business is now handled in two ways: by vessels running to Fall River, Providence, New Bedford, or other sound ports, and thence by rail to Boston, or by vessels going around the cape. The first method requires but one night for the journey, but it involves a transshipment of passengers and freight inconvenient to the former and expensive for the latter. The second method requires usually eighteen to twenty hours, or say a night and the forenoon of the following day, unless further delayed by thick weather. The canal will permit the journey to be completed in thirteen to fourteen hours, or comfortably between evening and early morning. To show the extent of this traffic, there are running regularly every night between New England ports, exclusive of any north of Boston, twenty-four large steamers both ways, of which sixteen carry passengers. During the summer not only is the total increased, but also the percentage carrying passengers. Of the twenty-four, the New England Steamship Company controls sixteen. All these steamers pass out through Long Island Sound, and by far the greater portion of the passengers and freight would be more expeditiously, economically and comfortably handled through the canal.

Second. Steamers carrying chiefly freight, but also some passengers, between Boston and ports south of New York. Lines are regularly established from Boston to Philadelphia, Baltimore, Norfolk, Charleston, Savannah and Jacksonville, with twenty sailings weekly both ways, offering an annual freight capacity of more than 2,000,000 tons. In additon there is a large volume of freight traffic, chiefly fruit, from the West Indies and Central America, steamers from such ports entering at Boston Custom House to the extent of over 200 annually. All this traffic could save by the canal, and much of it will use it.

Third. Freight traffic of raw materials transported in sailing vessels or barges. This traffic would furnish the major volume of the canal business, and it consists chiefly in coal, southern lumber for New England, Maine lumber, such as spruce for points south of the cape, stone from Massachusetts and Maine, ice south-bound, cement, brick and lime north-bound, oil and oil products, cotton reshipped at New York, and other bulky commodities. Such articles must be transported cheaply. The New England railways leading from New York are now so congested with passenger traffic and the carrying of high classified freights that such articles as those stated above cannot be given the low rates that their value demands—such traffic must go by sea.

In point of tonnage the biggest item in the above list is coal. During the year ended June 30, 1907, it is estimated that the coal shipments to Massachusetts Bay ports, of which Boston and Portland are the chief, amounted to no less than 12,000,000 tons which were shipped from New York, Philadelphia, Baltimore and Norfolk. Exclusive of the freight carried in the regular coastwise steamers, it is estimated that the other commodities aggregated during the year some 5,000,000 tons, making a gross total of about 18,000,000 tons.

From these statistics, and the diversified points of origin of traffic, it will be seen that this canal is of national importance. Although nominally the bulk of the cargoes that will use it north-bound start from New York, that port is not the originating point. The cargoes represent the produce of the many states seeking their market through a convenient channel—coal from Pennsylvania and West Virginia, tobacco from Virginia and the Carolinas, timber from Georgia, cotton from the whole of the great South. It is an enterprise in which every state on the Atlantic seaboard, from Maine to Florida and Texas, is interested.

If the volume of traffic already in existence is so great, and the saving in distance, delay and danger of such importance, the question naturally arises why, after 300 years of agitation, the canal was not built before. The answer to this very natural question will be found in the change that has been taking place in water transportation, a change which has made it possible for the State of New York to throw away its enormous investment in the existing canal system of the state and build an entirely new system from Lakes Erie, Ontario and Champlain to Albany, at a cost of over $100,000,000.

As long as the coastwise traffic was controlled by schooners, with a recognized unknown length of journey and an amount of delay impossible to forecast, the value of the distance and time saved was not of so much importance as to overcome the expense to a sailing vessel in traversing the more or less narrow waters of Buzzards Bay and being towed through the canal. Steam, however, within the last few years has been making the same inroads into the methods of coastwise traffic that it has already made in ocean traffic, so that the schooner is following in the footsteps of the picturesque clipper ship, and is giving way to the tug and tramp steamer.

As soon as a vessel owner adopts as a motive power an agent that will enable him to send his vessels on a schedule he at once begins to take account of delays, and places a money value against the time lost. This method of reasoning—and it is sound—warrants the expenditure of large sums in the improvement of waterways, such as the Cape Cod Canal, that would not have been, and were not, justifiable one or two decades since.

To-day the greater part of the coal traffic between New England, New York, Philadelphia and Norfolk is handled in barges, usually two or three in number, behind an ocean-going tug. To show the extent to which the new methods of transportation are superseding the old, the statistics compiled by the chamber of commerce for the port of Boston each year are at hand. In 1902 there arrived in Boston from domestic ports south of Cape Cod 1,033 steamers, 1,209 sailing vesels, 909 tugs and 1,879 barges; total, 5,030. In 1906, four years later, there were 1,148 steamers, 900 sailing vessels, 1,166 tugs, and 2,458 barges; total, 5,672. The aggregate vessel tonnage of the former year was a little over 5,000,000 tons, and of the latter nearly 7,000,000 tons.

The thing that strikes one in these statistics is the small increase in vessel number and yet the large increase in vessel tonnage, indicating an increase in average size of unit. While the total number of steamers remains substantially the same, sailing vessels have decreased 25 per cent in number and the barges have increased more than 33 per cent in number.

In 1902, of the total entrances at Boston, steamers comprised 20.5 per cent, tugs 18 per cent, sailing vessels 24 per cent and barges 37.5 per cent. The same division in 1906 was: steamers 20.3 per cent, tugs 20.6 per cent, sailing vessels 15.8 per cent, and barges 43.3 per cent. Or, taking the United States Government figures for 1905 and comparing them as a matter of convenience with the census returns for the year 1899, of the total tonnage carried to Boston 53.9 per cent went in steamers in 1899, and exactly the same in 1905; but while barges carried but 21.1 per cent in 1899, they carried 31.3 per cent in 1905, and the sailing vessel tonnage, which had accounted for 25 per cent of the whole in the first year, had fallen to 14.8 per cent in the second.

This same general change in traffic conditions will apply equally to all waterways that are to be hereafter constructed, and any waterway that is either to be constructed anew or to be made by the improvement of existing conditions, must be undertaken with the view of its exploitation by vessels whose power will be for the most part something other than sails. With the Cape Cod Canal established, the great source not only of danger but of delay will have been removed, and the towing companies, whether private or part of the various coal companies' equipment, can estimate with reasonable certainty upon the time of departure and arrival of their tugs, in fact with a much greater certainty than for similar shipments by rail.

Its national rather than local character is to be impressed on the attention of this convention, as this canal will do more than make a water route from New York to Boston. It will at once, by means of the Raritan, Delaware and Chesapeake, and other canals, complete an inside route safe at all seasons for all boats from North Carolina to Maine, and that without a single dollar more to be invested by the nation or any state. From that point the labors of this convention can be exerted to deepen, widen and develop the existing links and construct the others that are now lacking, so that this inside route may be continuous and of sufficient size for modern requirements. To this end not only must canals be built and small rivers enlarged, but the attention of those in authority must be directed to the further increasing of the capacity of the limiting conditions of some of the main arteries. The port of New York is the country's largest gateway. The general government has been at work for years, and has at last almost completed a new deep channel to sea. That channel is, however, for foreign commerce. The harbor has another entrance from the sound through the East River; this is the channel for internal commerce. It is the channel on which three states—New York, Connecticut and New Jersey—look directly, and it is the one used chiefly by the domestic ocean commerce of the Atlantic States. Although much improved over conditions existing twenty years ago, it is still much restricted by islands, reefs and narrow channels. If any great inland route is to be established it becomes the throat where all traffic will be congested; it is the one place which all are interested in having developed; it is one of the improvements to be most urged by this convention upon the national authorities.

ATLANTIC COASTWISE CANALS: THEIR HISTORY AND PRESENT STATUS

By G. D. Luetscher, Ph.D.
New York.

The Atlantic Coast offers exceptional opportunities for the realization of an efficient coastwise water route from Boston to the Carolinas. The construction of four canals, with an aggregate length of less than one hundred miles, will provide one thousand miles of protected inland navigation, while the extension of this system, by means of a canal across Florida, would connect the vast Atlantic coastwise trade with that of the Mississippi.

This system was partially realized more than three-quarters of a century ago. The Chesapeake Bay was connected with the bays of North Carolina by means of the Dismal Swamp Canal in 1828 and with Delaware Bay one year later, while the Delaware River was connected with Raritan Bay in 1838. No exceptional engineering difficulties were encountered and comparatively few locks had to be constructed to overcome the rise and fall due to elevations. The Delaware and Raritan Canal required the construction of fourteen locks, but all of these were at the entrances to the canal, so that for the entire distance of forty-four miles navigation was not impeded by a single lock. The passage between Delaware and Chesapeake bays was made by the use of three locks, two of which were at the entrances; while the Chesapeake and Albemarle Canal, which has monopolized most of the trade of the Dismal Swamp Canal since its completion in 1860 has reduced the number of locks between the Chesapeake and the bays of North Carolina from seven to one. In fact, most of the proposals for the construction of ship canals along these routes assert that locks can be dispensed with entirely.

Notwithstanding the increasing demands of the coastwise trade, the dimensions of these canals have not been materially increased since their completion save in the size of locks. The reason for this is clear. The canals had to meet the competition of the railroads from the very outset for the trade which, at the time of their organization, they hoped to monopolize. In fact, the Delaware and Raritan Canal was forced to enter into a union with the Camden and Amboy Railroad in the first year of its existence in order to prevent immediate abandonment of its charter privileges. Up to 1870 the canals enjoyed an increasing trade, but the financial return was not sufficient to warrant any undertaking for extensive improvements.

THE PRESENT DIMENSIONS OF COASTWISE CANALS AND LOCKS.

	Length.	Width.	Depth.	Rise and Fall.	Locks.		
					No.	Length.	Width.
	Miles.	*Feet.*	*Feet.*	*Feet.*		*Feet.*	*Feet.*
Delaware and Raritan	44	80	7	150	14	220	24
Chesapeake and Delaware	14	66	9	32	3	220	24
Dismal Swamp	28	60	6	35	7	100	16½
Chesapeake and Albemarle	14	80	7½	2	1	220	40

Since 1870, owing to the rapid improvement of the roadbeds of the railroads and the traction power of the engines on the one hand, and the lack of improvements of canals on the other, the trade of the latter has declined rapidly. The traffic of the Chesapeake and Delaware Canal, which reached its maximum of 1,318,772 tons in 1872, has fallen to 639,548 tons in 1900, while the traffic of the Delaware and Raritan, which exceeded 2,000,000 tons in 1870, decreased approximately 1,000,000 tons in less than twenty years. Unlike most of the canals in other sections of the country, the coastwise canals, save the Delaware and Raritan, have remained independent, but they have abandoned all hope for revival through independent action and have turned to the Federal government for aid. It is the main purpose of this article to trace the relation of the Federal government to the coastwise canals.

The Chesapeake and Delaware Canal has special claims upon the Federal government for several reasons. The construction of a ship canal which would permit the passage of the largest vessels would be of great commercial and military value. It is the latter point which the promoters of the canal emphasized from the beginning in their appeal for national aid. It was first made in 1805, when Gallatin recognized the force of the claim and recommended immediate subscription on the part of the National government. But the constitutional objections questioning the right of the Federal government to exercise such power were so strong that both the Senate and the House bills, introduced in 1810 for that purpose, failed to pass. After the War of 1812, a majority of the members of both Houses waived the constitutional objections and passed the Internal Improvement act of 1817, but it received the veto of Madison, who still clung to the constitutional objection. Monroe belonged to the same school as Madison, and it appeared that national aid was doomed for another eight years. However, he finally yielded, in 1824, and within the following five years the Chesapeake and Delaware Company received from the National government subscriptions to the extent of almost one-half million dollars. This sum, together with the subscription of $175,000 made by the states of Pennsylvania, Maryland and Delaware, enabled the company to complete the canal in 1829.

When the period of decline in the traffic set in, the managers started a movement to arouse the interest of the federal government in the plan of constructing a ship canal. This movement began in 1871, when the National Commercial Convention memorialized Congress on this subject. The government engineers were instructed to examine routes and make estimate of cost which were published in the annual report of the chief of engineers for 1872. In the same year, Maryland chartered the Maryland and Delaware Ship Canal. This company claims the right of way on the Sassafras route from Kennedy's Mills, at the headwaters of the Sassafras River, to the Delaware River near Liston's Point. Ever since, this company has been a rival of the interests of the old canal in presenting to the general government its superiority as a ship canal route.

The River and Harbor bill of 1878 directed the survey of all the routes which a ship canal was likely to follow. The engineer's estimates and recommendations were to be based upon the construction of a canal 178 feet wide at low water and 100 feet wide 26 feet below mean water. The locks were to be 600 feet long and 40 feet wide. Three routes were reported which were designated as the Northern, Intermediate and Southern. The Northern route followed the Sassafras River already mentioned, the Intermediate route entered Chesapeake Bay at the Chester River and Delaware Bay at the Broadkill River, and the Southern route made use of the Choptank River, Ferry Creek, Manticoke River, and Broadkill River. The primary purpose of these proposals was to furnish Baltimore with a shorter route to the sea, and hence the utilization for that purpose of the Chesapeake and Delaware Canal which follows the most northerly route was not even considered. Provision was again made, in 1882, for similar surveys with the same end in view.

It was not until the survey of 1894, made under the direction of L. Case, as chief engineer, that the Chesapeake and Delaware Canal claims met with favor. This report lays emphasis upon the coastwise trade as against the claim of Baltimore for an outlet to the sea, and concludes that for this purpose the most northerly route is the most desirable. Twelve years later (1906) Congress authorized the appointment of a special commission which was instructed "to examine and appraise the value of the works and franchises of the Chesapeake and Delaware Canal . . . with reference to the desirability of purchasing the said canal by the United States and the construction over the route of the said canal of a free and open waterway having a depth and capacity sufficient to accommodate the largest vessels afloat at mean low water," and also to make an estimate of the cost of the same from the surveys heretofore made under the direction of the War Department. Of all the other routes formerly proposed, the feasibility of the Sassafras route alone was to be considered by the commission. Their conclusions with regard to the advantages of the two were to be based upon commercial and military considerations.

The commissioners reported that both routes were feasible, but decided in favor of the Chesapeake and Delaware Canal because they believed that this route possessed slight military advantages and could be constructed for two million dollars less than the Sassafras Canal. The estimates included a valuation of the properties and franchises of the Chesapeake and Delaware Canal at two and one-half million dollars, and the franchises of the Sassafras route at one million dollars.

Another important link in the inland coastwise system in which the National government has been previously interested is the

Dismal Swamp Canal. The promoters of this canal were organized in 1787, and here again the abandonment of the enterprise was prevented by the subscription of $200,000 by the National government, in the Twenties. Since that time the company has made several attempts to improve the canal. In 1856, $150,000 were raised for that purpose, but the work was interrupted by the Civil War. In 1867, the company made another attempt to raise $200,000 for the purpose of widening the canal from thirty to sixty feet, and increasing the depth from five and one-half feet to eight feet, which would make it possible to dispense with all locks save at the entrances. This sum, however, was exhausted while the improvement planned was yet in an unfinished state, and foreclosure was threatened. At this point, the company again appealed to the National government for aid upon the ground that the nation had an interest in this canal. The claim was made that the Dismal Swamp route was preferable to the Chesapeake and Albemarle route, which, since its opening in 1860, had monopolized most of the trade because it admitted boats of greater tonnage. An extended correspondence between the company and the national treasury department ensued between 1871 and 1878, setting forth the financial interest of the government in the canal. A survey was made in 1878, but beyond this nothing was accomplished.

Some twenty years later the River and Harbor Act (August 7, 1894) provided: "For the survey of the waterways through the sounds of North Carolina and for the survey of the Dismal Swamp Canal . . . with a view of obtaining a depth of nine feet and the necessary width of a ship canal . . ." The report of the survey, made in accordance with this act, showed that not more than two feet available water could be depended upon in periods of drought, and three and one-half feet in wet seasons, although the depth was much greater than this except at a few places. The construction of a canal with a depth of ten feet and a width of eight feet at the bottom was recommended, and the cost was estimated at $1,711,380. This included the construction of three locks, the dredging of eighteen miles of canal, and the clearing of Croatan Sound and Paskuotank River. The report further declared that a sufficient amount of water could be obtained from Lake Drummond for the operation of the canal.

This survey, as the former ones, did not materialize in anything, and there is a great question whether it should in view of the fact that the Chesapeake and Albemarle Canal already offers a large part of the trade an opportunity to follow a protected inland route. This canal is eighty feet wide at the top and sixty feet at the bottom, and has a depth of seven and one-half feet. Although the entire route of the latter, including bays and rivers, is considerably longer than the former, the canal itself is six miles shorter and passage is made by the use of only one lock. Ever since its completion in 1860 it has taken most of the trade which formerly followed the Dismal Swamp route. In 1871, the number of passages through the Chesapeake and Albemarle Canal were twice those of the Dismal Swamp Canal, and in 1895, the tonnage (324,866 tons) of the former was almost fifteen times that of the latter. Unless the Dismal Swamp route can show a decided superiority, the improvement of the Chesapeake and Albemarle route will be the policy of the future, especially since there is only a remote possibility of government aid upon which the revival of the Dismal Swamp project must depend.

A third important link in the perfection of the coastwise system is the Delaware and Raritan Canal. In 1870, the traffic of this canal exceeded that of any other east of the Allegheny Mountains. The two million tons then carried were composed chiefly of coal shipments from Philadelphia and the outlet locks of the Delaware Division Canal at Well's Falls. When the canal was leased by the Pennsylvania Railroad in 1870, all the Schuylkill coal traffic under the control of the Philadelphia and Reading Railroad, which in that year amounted to 746,661 tons, had to seek either the railroad or the ocean voyage for points to the north and to the east. As a result, the tonnage of the canal decreased by one million within the next twenty years, while at the present time it is practically abandoned.

This condition has been reached in spite of the fact that no other waterway has such a commanding position with reference to the coal mines of Pennsylvania and the coastwise trade. In 1892, the Committee of Commerce estimated the sound traffic at 3,313,110 tons, the Hudson River trade at 7,642,282 tons, the resources of the Jersey rivers tributary to Raritan Bay and the Delaware and branches at more than 12,500,000 tons, and the traffic of Chesapeake Bay at 6,619,424 tons. In addition to this, the committee emphasized the fact that the military advantages of the proposed canal would be "the first link of an interior waterway safe from military attack and reaching from New York Bay to Florida and thence to the gulf." But, notwithstanding this passing interest of the federal government and the support of numerous associations in Pennsylvania, New Jersey and New York, the immediate future holds out little hope that the proposed ship canal will be undertaken by the national government or by private enterprise.

The improvement of the three canals which have just been described to the dimensions of ship canals would furnish a protected voyage for the coastwise trade from Cape Cod to the Carolinas. Numerous movements have been started to extend this system by the construction of canals through Florida and Cape Cod. The latter promontory is only ten miles wide at a number of places, and a cut through it is easy of construction; in fact, the claim is made that dredging alone will accomplish the result. And yet, for several centuries, this narrow neck of land has been permitted to increase the distance between Boston and points to the West and South between seventy and one hundred and twenty miles, and to force the commerce through shoals and fogs which, in point of danger, are only second to those of Cape Hatteras. The record of loss for twenty years ending in 1895 is 63 lives and 137 vessels, the value of the latter is estimated at one million and a half dollars. In the short period of four years following 1895, twenty-seven lives were lost and twenty-seven vessels valued at a quarter of a million dollars, were wrecked. This constitutes an average loss of $6,500 per month, and three vessels and three lives for every two months.

The amount of traffic which has been forced to follow this circuitous and dangerous route has always been great and promises to increase steadily in the future. The enlarged Erie Canal will connect the sound with the lakes of the West, and the completion of the proposed Cape Cod ship canal will enable Boston to compete for the trade of the West. The claim is made that the freight which railroads bring to Jersey City, and which is bound for Boston, will be transported at one-third the rate now charged by railroads. To this we must add the advantage to the extensive commerce with the ports to the south of New York City.

In view of these facts, the postponement of completion of this canal to the opening years of the Twentieth century constitutes one of the greatest surprises in the history of canal construction, especially since the proposed cut has received attention for more than two centuries. Agitation was started by the little town of Sandwich, in 1676. The project was encouraged by a survey under the direction of the General Court of Massachusetts, in 1697, and again, in 1776, when General Machin was engaged to make a survey. The Revolution intervened and the plan was postponed until 1824, when the federal government engineers were directed to make surveys. Another federal survey was ordered in 1860, but again postponed until 1875, when General Foster, of the United States Engineers, made a thorough examination and recommended the abandonment of the former lock navigation proposals in favor of a deep-cut ship canal. A number of favorable congressional reports followed some ten years later, but all the work of the national government in the nineteenth century, like the agitation of the colony of Massachusetts in the eighteenth century, came to naught.

Finally, a few enterprising individuals formed "The Boston, Cape Cod and New York Canal Company." A charter was obtained from the Commonwealth of Massachusetts, permitting a capitalization of $6,000,000. Under the direction of this company, surveys have already been made and a route selected which, it is believed, will be free from rocks. The managers are "confident that two years and a half will witness the completion and opening of the waterway."[1]

The full value of this coastwise system will not be realized until a canal is constructed across Florida. Agitation in favor of such a canal began as early as 1826, when the general government ordered surveys of two routes for the purpose of connecting the Atlantic coast trade with the Mississippi. One of the routes surveyed followed the St. Mary's and Apalachicola rivers a distance of some 200 miles, while the second route, about fifty miles shorter, proposed to utilize St. John's River. The report of the engineers that the canal would have to be 9 feet deep and the locks 250 feet long and 50 feet wide in order to admit the boats of the Mississippi—which dimensions were double those planned—did not encourage immediate activity toward the realization of the proposal.

---

[1] Fergus Crane, The Cape Cod Canal (Eclectic Mag. 116, 277-82).

In 1852, Congress ordered a survey of a route which was to utilize the St. John's and Hillsboro rivers, whereby it was proposed to cut down the distance to 115 miles. The canal was to be 6 feet in depth and the locks 116 feet in length, and hence, the same objection applied to this plan as to the former. Several surveys were again made in the Seventies and the Eighties resulting in the claim that a canal with twelve feet depth could be constructed by following the Valley of the Oklawaha and connecting it with the lower part of the St. John's. This route would necessitate a canal fifty miles longer than the one proposed in the former survey, but it would shorten the distance across Florida by twenty miles. Since that time, there have been several congressional reports, but all their recommendations are based upon previous surveys.

This brief survey of the history and present status of the above canals brings out clearly several important facts. The financial condition of the canal companies has at no time during their history permitted them to enter upon plans for improvements providing for material enlargement of the canals beyond their original dimensions. Hence, since the beginning of the decline in the traffic in the Seventies, the companies have looked to the Federal government to assume direction and financial responsibility in all proposed improvements. The Federal government has accepted this responsibility to the extent of ordering numerous surveys which have been set forth in voluminous reports. But not a single step has been taken beyond this point, notwithstanding the fact that the reports have declared the proposed works entirely feasible.

The cause of this situation is quite obvious. The government is confronted with claims from all sections of the country. Many of these are worthy, but not all of them can be constructed at one time. It rests with the advocates of favored schemes to come to some agreement resulting in the selection of some specific improvements to be constructed at one time. This has not been done in the past, and as a consequence the government has doled out small sums to a vast number of schemes without any results. Nowhere is this baneful effect of particularistic action more clearly shown than in the methods employed during the last three decades toward the perfection of the Atlantic coastwise system by government aid. This system presents a distinct unit, but up to the present time each canal company has pushed its claim separately.

However, we need not conclude this article with such a pessimistic view. On November 19, 1907, there assembled in Philadelphia delegates from all the Atlantic states to consider the question of united action for the realization of an inland water route from Maine to the Carolinas. On the following day, the conference formed a permanent organization called "The Atlantic Deeper Waterways Association." Several decisions of this conference are significant. They adopted resolutions advocating the construction of the entire system by the Federal government, and lamented the fact that the construction of the proposed Cape Cod Ship Canal had been left to private enterprise, while several of the delegates voiced the sentiment that the entire system should be free from the payment of toll. The association, however, showed that they were not prepared to recommend the completion of one link at one time, for they voted down the proposition that the Chesapeake and Delaware Canal should be converted into a ship canal before undertaking other works.

THE ANTHRACITE-TIDEWATER CANALS

By Chester Lloyd Jones, Ph.D.,
Instructor in Political Science, University of Pennsylvania, Philadelphia.

The coal-carrying canals were constructed during the period[1] of great national interest in the opening of water routes to the West. Unlike the larger projects, they were intended to supply transportation to a special interest, and upon the development of that interest—the coal trade—depended their whole prosperity. Their construction took place at a time when public interest in waterways was at its height. Into the history of each enters much of the speculative element which attended the construction of all the early projects for furnishing cheap outlets for the undeveloped national resources. With the advent of the railroad as a transporter of coal their operation was found less and less profitable, and they have gradually dropped out of importance as industrial agents.

It is the object of this paper to review the history of these waterways and to summarize the conditions which determine whether or not they may again become available under the new economic conditions which have developed or seem likely to develop.

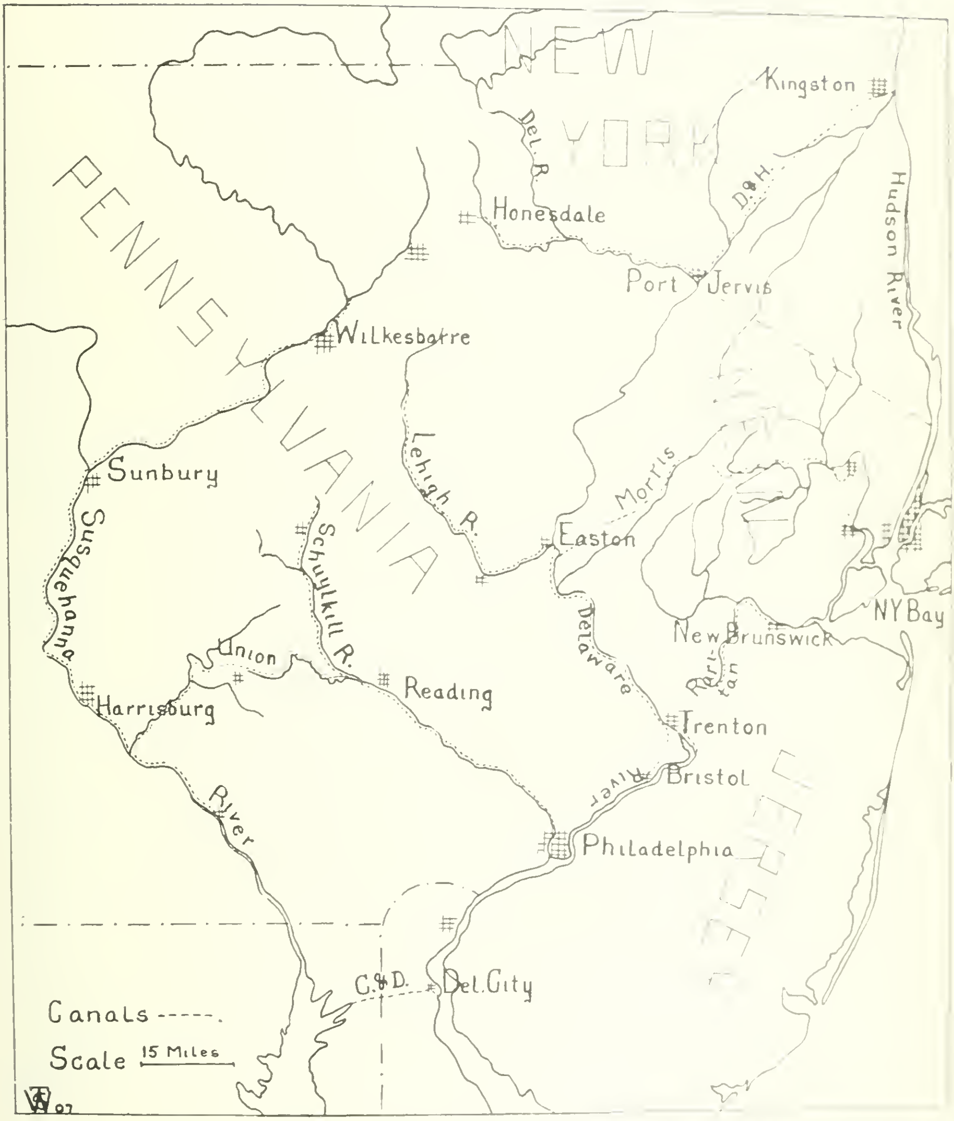
The Delaware and Hudson Canal

The construction of the Delaware and Hudson Canal was authorized by the joint action of the legislatures of Pennsylvania and New York in the sessions of 1822-3. The company became a banking concern and a large landholder—the latter through the desire to control tonnage for its waterway.

The period in which the project was launched was one of great speculation in public improvements, and the stock was subscribed to the full amount by two o'clock of the first day on which the books were opened. The original plan had been for a canal and slackwater navigation, but an improvement, to consist of a canal alone, and finally of a canal and a railroad was substituted. The first through shipments of coal took place early in 1829. The

---

[1] The historical material used in this article is summarized from a monograph preface for the Carnegie Institution of Washington by the author



Map of Susquehanna and Anthracite Tidewater Canals

coal was brought down to the canal from the mines at Carbondale at first by teams at a cost of from $2.25 to $2.75 per ton, later a substructure of timber faced "with rolled iron plates . . . . fastened . . . with screws" was used. The coal traffic on the canal in its early years received an important supplement from the general trade, which was a greater factor than on any of the other coal canals; but the income from it never equaled the running expenses of the waterway. The coal market was so limited that not until after the results of the panic of 1837 had disappeared was the company able to declare dividends. Then the trade necessitated the enlargement of the waterway—originally intended for thirty-ton cargoes, and it was improved to accommodate forty and eighteen-twentieths tons in 1844, fifty tons in 1846, ninety-eight tons in 1850, 140 tons in 1853. Meanwhile the railroad to the head of navigation had undergone several improvements to increase its capacity. In 1847 the first important contract was entered into to get the coal of other companies, thus greatly increasing both tonnage and tolls.

In the years following 1840 the company enjoyed a period of great prosperity. In 1843 all outstanding bonds were paid. By 1845 almost all the banking capital had been redeemed and the loans of credit by New York were canceled in 1848 and 1850. This left the company entirely free from debt. Soon after, however, the desire to expand to other markets led to the construction of railroads and to new bond issues. The greatest railroad expansion comes, however, after 1861, and up to 1865 the stockholders found their canal a rich source of income. How valuable a property it was may be judged by the following typical instances of dividends received: 1840, 11 per cent; 1847, 22 per cent; 1855, 18 per cent; 1858, 5½ per cent (due to railroad expenditures); 1860, 7 per cent; 1861, 9 per cent; 1862, 11½ per cent; 1863, 34 per cent; 1864, 31 per cent, and 1867, 16 per cent. The decrease after 1864 was due to the transfer of much of the tonnage to railroad routes. The prosperity was due in large degree—in fact mainly—to the toll on coal of other companies. The first contracts for this service were made in 1849, and soon furnished an important part of the income. By 1854 the tolls paid by the Pennsylvania Coal Company, the chief independent company, for the year amounted to $541,378.07.

An unfortunate dispute as to this traffic arose as to the tolls chargeable after the enlargement of the canal. The contest was taken before the courts in 1856, and it dragged on until 1863, when the court gave an award for the Delaware and Hudson Canal Company amounting to $350,000. The legal victory was, in fact, a great economic misfortune. After the adverse decision the shipping of coal by the canal was cut off by the independent company, and its traffic turned to the Erie Railroad, which, in 1866, carried almost all the coal formerly sent over the canal by the Pennsylvania Coal Company. The diversion of this traffic dealt a deathblow to the prosperity of the canal. In the two years 1865 and 1866 the company lost more than the entire amount of their claim for extra toll, and the canal income fell from about two and a half times the expenses for repair and maintenance to a little over one-fourth of their amount.

At once the policy of the canal company was changed. An attempt was made to greatly extend their railroad holdings, and thus to win back the traffic they had lost and to obtain access to new markets. In 1867 a railroad outlet through Scranton was secured by the absorption of the Union Coal Company. Another company, with coal lands and a railroad connection across the Susquehanna, was purchased, giving an outlet to Baltimore and to Jersey City. In 1868 a contract with the Erie was made to build a line to give access to the Rochester and Buffalo markets. Other branch roads were provided for, and an exchange of stock with the Erie brought about the identity of interests of those two companies. The Albany and Susquehanna Railroad was leased in perpetuity in 1869, and further access to Baltimore acquired. Three years later the New York and Canada Railroad was put under construction to tap the Montreal market.

By the time of the panic of 1873 the company was in the full swing of the expansionist movement. Railroads had superseded the canal in the transportation interests of the company. How thorough had been this transformation in the five years since 1867 is shown by the fact that by 1872 all statistics of canal traffic disappear from the reports and the only regular mention of the canal is in the entry of canal tolls in the income sheet.

The history of the canal since 1872 is an uneventful one of decline and abandonment. The coal shipments were practically confined to those made by the company and fell off yearly. In 1897, preparatory to final abandonment, a part of the canal assets were charged off to profit and loss and subtracted from the surplus. The following year the "managers . . . decided . . . to cease operating the canal. . . . the cost of transportation is too great as compared with other methods." Since then the damages made by freshets have not been repaired and "the cost of the canal . . . has been charged off and no longer stands as an asset."

The Morris Canal Company

Least successful of the coal carrying waterways was the Morris Canal—one which, even had railways not made competition by the route impracticable, would have had a hard time competing with the other water routes to the seaboard. The claims of the promoters of the enterprise were by contrast greater. They expected the Morris Canal to secure a monopoly of the trade of the west to New York, to control all the coal trade from the Lehigh region to tidewater and to develop along its route the greatest manufacturing district of the new world. The canal was first projected as a state work, but in 1824 was given to a private company. The physical difficulties to be surmounted were greater than in any of the other projects. The rise and fall to be overcome was reported as 1,730 feet, a forbidding distance, of which 1,470 feet must be overcome by inclined planes instead of locks.

The high tide of speculation at which the canal project was started brought offers of subscription of $20,000,000 to the $1,000,000 of stock offered in the spring of 1825. Public confidence soon fell away and by 1828 over one-third of the stock was forfeited through non-payment of assessments. The financial straits of the company were relieved by loans abroad, but the work dragged, and the first boat did not pass to Newark until the fall of 1831. Even after the canal was in working order it was difficult to borrow money to fit out boats for use thereon. Financial difficulties continued until the next period of speculation preceding the panic of 1837. Additions to stock authorized by the legislature in 1835 were eagerly subscribed for, the forfeited shares were easily sold at par, and in 1836 with this money the canal was completed to Jersey City. The directors boasted that in one year their financial operations had put the company in a position to discharge all debts "from their own capital and resources" and still have $1,000,000 for banking purposes. These finances, however, were largely concerned with "notes of other banks equal to specie," and when the panic of 1837 came it forced the company again into embarrassment.

A twenty-five ton canal, it was evident, was inadequate to maintain itself. Enlargement to a capacity of fifty-four tons was attempted, but while the improvement was still only under way the company was forced into bankruptcy, and in 1844 was sold to satisfy a mortgage.

The purchasers reorganized the company by consolidating the old common stock and issuing preferred upon which demands of 10 per cent were guaranteed. The new company continued the improvements on the canal and the enlargement of the planes which, when they were acquired, passed boats only at one-fourth the speed of the lift locks. Up to this time no development such as had been hoped for in the through coal trade to tide had taken place. In 1847 even, only 17,885 tons reached Newark, and upon all through trade there was no profit. An enlargement to seventy-ton capacity was next attempted. By 1856 most of the planes on the west slope, where the chief lifting was to be done, had been enlarged and a depth of five feet of water attained. At last the tide seemed to have turned—the canal had been quadrupled in capacity and boats could be passed carrying sixty-five to seventy tons. Shipping facilities on the Delaware were improved and arrangements made to get coal from the Lehigh Valley Railroad as well as from the Lehigh Canal. Finally, in 1859, the sale of the Delaware Division by the State of Pennsylvania to a private company made possible a combination as to toll rates which promised increased income.

The outlook for the Morris Canal at the outbreak of the Civil War was therefore more encouraging than at any other time during its history. The war period proved for it, as for other coal-carrying routes, a period of rich harvest. The total tonnage rose from 554,034 tons in 1858 to the highwater mark of 723,927 in 1864. More coal was offered than could be carried, though the boats were pressed to the limit of their capacity. The coal tonnage rose from 350,331 tons in 1859 to 459,175 tons in 1866, an increase which, with the rise in tolls, brought dividends never before or afterward approached in the history of the company. The highest profits were reached in 1864, when 10 per cent was paid on both common and preferred stock. The period of prosperity was soon brought to an end. The railroads, heretofore the feeders of the canal, now became its competitors. This influence first began to be felt in 1866, when the Morris and Essex Railway began to supply with coal part of the territory formerly reached by the canal. To counteract the competition new enlargements were put under way and special inducements offered to boatmen to stay on the canal in the coal trade. But the rail rates, especially the rate wars, soon cut off all profits, and in 1870 the company asked the legislature for permission to lease the canal and its properties. Permission was granted. Early in 1871 the Lehigh Valley Railroad leased the canal and its important terminal facilities in Jersey City for 999 years. The subsequent service rendered by the canal has been a decreasing one. Only in two years (1883 and 1884) after 1870 has the tonnage risen above 300,000 tons. By 1888 the trade had become "almost exclusively" local. The flood of 1902 on the Lehigh finally closed the western end of the canal, and it is now no longer open for use except for the local trade and for coal delivered to it by railroad.

By its original size and by the physical difficulties to be overcome the Morris Canal was from the first seriously handicapped as a route for the through trade. The part it played was consequently a disappointing one.

The Delaware Division Canal

The object of this detached portion of the state works of Pennsylvania, unlike that of the system which was to tap the trade of the west, was to supplement works already under way—the Lehigh improvements, with which interests it has now become merged. It was thus built with the definite thought that its value should be found in service to the coal traffic. The waterway was constructed in the years 1827-1830, though navigation was still incomplete at the end of 1831. Faulty construction, bad judgment in determining the size to be given the canal and the interstate jealousies of New Jersey and Pennsylvania hindered the usefulness of the waterway. New Jersey was reluctant to yield the use of the Delaware as a feeder, and Pennsylvania forced traffic through an artificial route to Bristol for fear an outlet lock to the Delaware and Raritan would divert the profits from her citizens to those of New Jersey. The dimensions of the canal locks were but half those of the Lehigh, and transshipment was thus necessary, or the use of small boats suitable to the Delaware. Recommendations that the canal be made uniform with the Lehigh remained unheeded by the legislature until railroad competition began to threaten both the New York and Philadelphia markets. Then improvements were put under way, but were not completed when the canal was sold with the other state works undisposed of, to the Sunbury and Erie Railroad in 1857.

An independent company took over the canal the following summer and operated it for nine years. The improvement begun by the state was completed, but due to failure to come to amicable arrangements with the other waterways the canal did not share the phenomenal prosperity enjoyed elsewhere during the Civil War. The lack of harmony finally brought a proposal to buy the canal from the Lehigh Coal and Navigation Company, which was accepted by the Delaware Division Canal Company in 1866.

The Lehigh Coal and Navigation Company

The plans to develop the mining lands on the Lehigh by means of a canal were developed earlier than the other projects already discussed. Indeed the Morris and Delaware canals were built largely as supplements to the Lehigh improvements.

Numerous unsuccessful ventures dating back as far as 1793 prefaced the successful completion of a waterway down the Lehigh in 1820. The coal was floated down in arks by means of artificial freshets. The tonnage grew rapidly, but was interfered with by the expense of constructing new arks for each trip, as they could not be returned up the river, but were broken up on arrival at Philadelphia. Since 1825 also an uninterrupted slackwater navigation had tapped the Schuylkill region. For these reasons an improvement of the waterway to a slackwater navigation up to Mauch Chunk was determined upon, especially as the state had committed itself to the improvement of the Delaware. The canal was able to accommodate boats of 120 tons by 1829. Upon the completion of the Delaware Division the use of arks was gradually abandoned and permanent boats substituted. In the years following 1835 other slackwater improvements were introduced above Mauch Chunk and a railroad was substituted for the highest portion of the route.

The extensions were hardly completed when a disastrous flood almost wrecked the company in 1840. A few years put it on its feet, however, and the period 1840-1867 proved here, as on the Delaware and Hudson, one of exceptional prosperity, even the financial stringency of 1857, though it caused grumbling, did not cut down the dividend-paying ability of the company.

The coal tonnage, which had risen from 365 tons in 1820 to 225,585 tons in 1840, steadily grew to 1,276,367 tons in 1855. This was the period of the company's history during which its canal interests were most prominent in the minds of the managers. It was even planned to give up the mining of coal by leasing those properties and making the company a navigation company in a more confined sense. A change in this policy came with the year 1856, when the Lehigh Valley Railroad paralleled the navigation, necessitating reduction in toll rates and involving a diminution in tonnage. As a result the managers report in 1859: "The company must look for their remuneration to the augmented production of the mines . . . from which to derive a revenue." The importance of railroad connections was also increased.

During the Civil War the necessity for turning to lines of activity other than the exploitation of the canal was not emphasized to the extent it would have been but for the great increase in demand for coal which, notwithstanding the railroad competition, gave the canal more traffic than it was prepared to handle. Consequently the war years show profits unapproached before that time, though freshets, strikes and rate wars, and in 1862 a disastrous flood, cut down the profits that might have been reaped.

The Lehigh Company was not ignorant of the fact that the railway development in progress threatened its prosperity, and even in these years of exceptional dividends took steps to counteract the coming disadvantages under which it would have to work. Extensive coal lands were purchased, the smaller tributary railways absorbed and an extension of the Lehigh and Susquehanna Railway—till now a feeder to the canal only—was made from Mauch Chunk to Easton to compete with the Lehigh Valley Railroad. The company entered into the strife for tonnage and markets that absorbed the interest of the coal transportating routes in 1860-70. As a part of this policy the Delaware Division Canal was acquired in 1866. In making these extensions the corporation outran its credit, and in 1870 found itself facing the possibility of a combination of the railroads across New Jersey, which would leave it without a rail outlet to New York. Both financial and strategic reasons counseled that an alliance be made with the Central Railroad of New Jersey, the only independent outlet remaining. For these reasons the railroad properties were leased to the Central Railroad of New Jersey in March, 1871, for a rental of one-third of the gross receipts on the line. For the time the Lehigh Company again became "a coal and navigation company . . . as during the period of (their) greatest prosperity." It had thus gotten rid of part of its financial responsibility before the panic of 1873. When that came the company was further embarrassed and was forced to sell its Wyoming coal holdings to a company allied with the Central Railroad, which latter corporation also leased all other properties of the Lehigh Company, including its two canals, in December 1873. This agreement removed the Lehigh Company from active business operations until 1877, when the Central Railroad went into the hands of a receiver, and the leased properties, with the exception of the railroad, were returned to the owners. The return was by no means a misfortune, for the lessees had expended over $1,100,000 in improvements upon the property which now returned to the owners without cost to them.

The relative importance of the company's properties had now changed radically. The majority of the capital was in the railroad—the rent from which formed the chief item of income. Next in value were the mines, and last, the canal. The canal tonnage since this period has gradually fallen with the increase of railroad connections to New York, the lowering of rates and the unfavorable terms granted on certain routes—notably the Delaware and Raritan Canal—making through trade in competition with the railroads unprofitable.

The success of operations is shown by the course of profits. From the time when the company again assumed control in 1877 up to 1884 the yield varied, showing a gradual increase up to $276,106.20 in the latter year. After that profits gradually decreased to 1893, when they reached $16,986.77. Since then there have been small profits and small losses on operation. A disastrous flood in 1902 necessitated increased repairs, and by cutting off tonnage helped to bring deficits.

At present the canal is operated with a tonnage of 240,151 tons (1906).

The Schuylkill Canal

The Schuylkill Canal is an intermediate term between the distinctively coal-carrying routes and the canals to tap the trade of the West. Originally planned with the latter object in view, its traffic was almost from the first chiefly coal. The construction for boats of twenty-five tons, with a depth of three feet, took place in the years 1818-25. In 1832, to accommodate the growing coal trade, it was enlarged to eighty tons capacity, and in 1845-47 to 170 tons. Even in the latter year, however, the coal traffic was only 6,500 tons. Beginning with 1832 the canal had a practical monopoly on the coal trade from the district it served, and for the next few years showed handsome profits. The stock rose to three and one-half times its par value, a figure till then unprecedented in the history of American joint-stock companies. The end of the prosperity of the route was foreshadowed in 1842, when the Philadelphia and Reading Railway was completed from the Falls of the Schuylkill to Port Richmond. This, with the other connections, gave a through rail route to the coal mines. The enlargement above mentioned and serious floods brought financial embarrassment, necessitating a reorganization of the company in 1852. In 1861 the Reading Railroad began to work for the monopoly of the trade by buying up the branch coal roads. The canal company adopted similar tactics and secured favorable tonnage contracts for ten years, and satisfactory dividends were again resumed in 1866-67. The independent existence of the canal company was brought to an end in 1870 by the continuance of the Reading's plan to capture the avenues of coal supply from the Schuylkill region to Philadelphia. The canal and its properties in this year were leased to the Reading for 999 years, at a yearly rental of $655,000. Since that time no important expenditures have been made to improve the canal, and through traffic has practically ceased.

Historical Review Summarized

In all of the waterways, the history of which has been reviewed, the main trade has been coal. The general trade has been negligible from the standpoint of profits, with the exception, perhaps, of the trade in iron ore on the Lehigh and Morris Canals.

The canals fall into two classes—the Morris and the Delaware and Hudson; and the Lehigh, the Schuylkill, and the Delaware Division. The first group involved carrying all through freight over heights of land intervening between the ends of the waterways. The latter group takes the heavy freight offered downward only. These groupings also correspond to the availability of the canals as trade routes, in the past and in the future. From this point of view the situation of the Morris Canal is the least favorable. The physical difficulties to be overcome place it at a permanent disadvantage in comparison with the other routes, notwithstanding the location on the line from the coal fields to New York. In the present state of mechanical development the extended use of the inclined plane, even if the water supply could be increased sufficiently to support an enlarged canal, seems to be out of the question.

The Delaware and Hudson, except that inclined planes are not necessary, labors under similar disadvantages, but its ability to handle a large traffic is proved by its history. Its operation has been found unprofitable under present conditions, however, and the railroad interests in control do not look upon its rehabilitation as a practical matter. This is also the case with the Schuylkill route, though in this case there is no summit level to be overcome.

The Lehigh and Delaware Division Canals, now under one ownership, are in a different class. The physical conditions are more favorable and it is also to be noted that unlike the other two they are held by a company in which the development of the canals would not merely mean a supplemental outlet to a market already reached by its railroad holdings, but an independent access to markets now reached through agencies furnished by other transportation companies. These canals also have proved in the past their ability to handle traffic.

The Present Problem of Coal Canal Transportation.

The problem of successful maintenance of a coal-carrying canal is the same as for other transportation routes—the securing of tonnage. This is difficult at present because of the high local rates charged on the railways which might prove feeders to the waterways. As a result the canals find it difficult to make a competitive rate such that they can compete with rail carriage on the through trade. The high local rates on coal shipped to the canals form so large a part of the cost of carriage to market that the canals must work at a peculiar disadvantage, unless they can supply the tonnage directly from their own coal mines or over railroads under their control. When the competing railroad companies are also coal mine owners, it is evidently against their interests to establish local rates which would divert traffic from their own to the rival transportation interests of the canals.

Another disadvantage of canals is the necessity of transshipment, especially when the cargoes on the canals are of small size. Where the coal must be loaded from a railroad to a canal boat, and later from a canal boat again to a railroad car, the incident expense greatly cuts into the ability of the canal to compete. Where the second transshipment can take place into large barges, the disadvantage is not so great, especially as the canal boat will have the ability to come directly along side, and wharfage charges can be avoided.

The inability to market products during the winter is a permanent limitation on the use of canals. Where the business must for months be transferred to the railroads there can naturally not be the continuity of business relations that is so much to be desired.

The technical problem of reducing the fixed charges of canal maintenance and the delays of lockage is also important in determining whether the canals can again be made available. The fixed charges of attendance of lockmen and the repairs of locks form the largest single item of expense on an average canal of 100 tons to 150 tons capacity. This renders the decrease of the number of locks an important factor in cutting down cost of operation. Modern engineering is making possible the use of locks of much greater height than those now in place on canals of medium size, and if such could be introduced with profit, adopting a sixteen- or twenty-foot lift where now eight- or ten-foot locks are in use, an important saving could be made.

Locks of higher lift would also mean a great economy in time, for it takes only a small increase of time to fill or empty a lock of twice the usual present height. The great waste of time in lockage at present is consumed in getting the boat into the lock, not in raising or lowering the boat. The loss occasioned in checking a boat which is going into the lock too rapidly, or in starting one lacking momentum, and pulling it into the lock by hand or by winches consumes many times the time necessary to do the actual work of lockage. Where short lift locks are used the time spent in lockage is often as great as the entire time spent in actually traversing the prism. Higher locks would therefore mean a decrease in the personnel and equipment necessary to operate the canal as well as increased earnings on the capital invested in boats, due to increased ability of each boat to take produce to market.

The most decided advantage of a canal is in the low cost of moving freight. Where speed is not an essential, as in the heavy and rough products, this may prove quite sufficient of itself to overcome disadvantages which would otherwise make operation unprofitable. The actual cost of moving freight—exclusive of lockage—on a 100-ton barge canal is somewhat less than one-half cent per ton per mile. If the barge is increased in size, the cost per ton mile is more than proportionately less.

Where the fixed charges of a canal are low, this advantage in towing cost becomes a very important feature. A canal whose fixed charges and towing expenses with barges of 100-tons capacity, on a freight total of 250,000 tons, give a ton mile cost of one and one-half cents, would give a ton-mile cost of one cent per ton-mile on 500,000 tons and three-quarters of a cent per ton-mile on 1,000,000 tons. Increase in the size of the barges, decrease in the number of locks, or in the cost of towage, would, of course, further decrease ton-mile cost. In the latter item experience with electric traction in Europe shows that there important savings can be made over animal power. Towing from the bank of canals of the character under discussion has proven less wasteful of power than towing by tugs. Further, the distinct advantage is gained that it is accompanied by less washing of the banks. These reasons also set the profitable limit of speed even when mechanical traction is introduced at four miles an hour.

Can Coal be Profitably Carried by the Canals under Present Economic Conditions?

The Morris Canal seems to be handicapped to such a degree that its abandonment may be accepted as final. Under present conditions the operation of the Delaware-Hudson route, once an important avenue of trade, has been found unprofitable, as already indicated, and there is no prospect of its further use in the near future. The same is true of the Schuylkill Canal.

Of the distinctively coal canals discussed, the only one in operation throughout its whole length is that furnishing an outlet by the Lehigh-Delaware route. This canal still carries a coal traffic of over 200,000 tons. During the past summer experiments have been introduced on the upper section with the object of finding whether mechanical traction can be introduced at a profit. Two experimental sections of two miles each have been installed. One section is operated by an electric device of the American Adhesion Traction Company; the other by a modification of the Lehigh Company's electric mine locomotive. All the traffic on both of these sections is handled exclusively by these machines, which run along the line of the old towpaths. They handle the traffic fairly well, and the expense of operation is less than that of animal power. Whether the fixed charges on the investment will overbalance this advantage cannot be stated as yet because of the short time in which the experiment has been in operation. Whether the canal can again prove itself able to furnish a profitable outlet for the coal trade depends upon the success of experiments of this nature and modifications to cut down the fixed charges, such as are mentioned above.

The Relation of the Canal to the Coastwise Inland Waterways

If the canal can again prove itself able to deliver coal at the Bristol wharves on terms equal to the rates offered by the railroads, it would seem to have an assured business, even under present conditions, for the following reasons:

(1) To the Philadelphia market—the one to which the canal first sent its traffic—the canal has immediate access. The size of the city makes the market to be supplied one capable of large development.

(2) If the coal can be brought economically to Philadelphia, even under present conditions an important trade southbound can be developed. This would necessitate transshipment to larger coal barges, but that charge could be borne without destroying profits. That this is the case is proven by the fact that the Reading Railroad finds it profitable to transship coal at Port Richmond from its cars to coal barges which it sends through the Chesapeake and Delaware Canal to the Baltimore, Washington and Norfolk markets. A profitable business has thus been built up in spite of the canal tolls involved on the Chesapeake and Delaware

Canal. If the Lehigh Canal could profitably bring coal to Bristol, this trade would be open to it also.

The possibilities of developing markets other than Philadelphia would be greatly increased should the present movement to improve the coastwise waterways be attended with success. The trade to the south would be on a better footing because of the increased capacity of the boats into which the transshipment could be made, and because of the abolition of canal tolls.

More important even than this would be the outlet again opened to the canal, through the Delaware and Raritan, to the New York market. This would be a revival of a trade which for years formed an important factor in the total business of the Lehigh and Delaware canals. In 1867, 472,751 tons of coal from the Lehigh region passed into the navigable feeder of the Delaware and Raritan. By the same route were sent, even as late as 1884, 238,756 tons. This trade represented in each of these years nearly twice the amount that reached Bristol for the Philadelphia trade.

At present the Pennsylvania Railroad interests controlling the Delaware and Raritan route maintain the charges at such a figure that no competition can be given to the railroads by the canal company on through coal trade to New York. Were the tolls abolished and the chanel widened this market, like that to the south, would be open to exploitation by those delivering coal by water.

The answer to the question of the future availability of the coal canals is therefore a double one. In the case of the Morris Canal its future availability seems highly improbable. In the case of two, and perhaps the four others, the problem is a technical one—whether the improvements of modern engineering can make their operation so economical as to make their use as a supplement to the railroads in carrying low-class freight a profitable one. Physical ability to handle traffic is proved by their history. Availability of tonnage, through the granting of competitive rates on the feeding lines, and economy of operation, are problems to be determined by the community of railroad and canal interests and by improvements in engineering. A revival in the near future seems possible on but two of the waterways—the ones carrying coal on the Lehigh-Delaware route.

THE NEW YORK CANALS[1]

By Professor John A. Fairlie,
University of Michigan, Ann Arbor, Mich.

In the great revival of interest in internal waterways, it is significant, though not surprising, that the first work of great importance has been undertaken by the same state that inaugurated the internal improvements of the early nineteenth century by the construction of the first Erie Canal. Ninety years ago work had been commenced on what then seemed the stupendous project of De Witt Clinton, the result of which was to establish the commercial supremacy of New York City and to make the State of New York the most populous and richest state in the Union. Until forty years ago, the Erie Canal remained the all-important transportation route between the Great Lakes and the Atlantic. Since then, the canal traffic has declined in amount, and its relative importance has dwindled to a small fraction of its former significance. But there are reasons for believing that a considerable part of this decline has been due to the failure to improve the canals to meet the needs of modern conditions, and the State of New York has now undertaken the construction of a new barge canal system, which it is expected will meet the conditions of to-day and bring about a notable revival of water transportation across its territory.

An account of the recent history of the New York canals should be of service in any discussion of American waterways. And it is proposed in this paper to examine the later period of canal traffic, the causes of its decline, the plans for the new water routes, the present status of the construction work, and the probable effect on transportation, commerce and industry.

From the time of their construction until after the last third of the nineteenth century had begun, the New York canals held undisputed their position as the main transportation route from the lakes to the seaboard. As late as 1862 the ton-mileage of canal traffic was more than double the combined ton-mileage of the New York Central and the Erie railroads. And in 1866 the canal traffic comprised 60 per cent of the freight movement across New York State.

---

[1] Cf. for fuller details articles in the Quarterly Journal of Economics XIV, 212 (February, 1900), and XVIII, 286 (February, 1904).

It is in the development of internal commerce since the Civil War that the decline of the canals is to be traced. As early as 1863 we may notice a decline in the flour traffic on the canals; but the other important items showed no falling off at that time, and, indeed, showed an upward movement in the years of expanding business from 1866 to 1873. But the railroads were now securing a share of the bulk commodities; and their freight traffic as a whole was growing at a much more rapid rate than the railroads.

In the years of depression following 1873, canal traffic began to show a positive reduction in volume. In 1876, but 4,172,129 tons were moved on all the canals, less than two-thirds of the traffic for 1872. The railroads, however, continued to develop their traffic, and in 1876 carried a total tonnage of 14,983,600 tons, more than three times the aggregate canal tonnage.

For the next few years canal traffic showed signs of revival, reaching a total of 6,437,656 tons in 1880. As some of the branch canals had now been discontinued, the tonnage for 1880 was, in fact, larger than the aggregate for the same canals in any former year. But this movement was only temporary, and by 1882 the total canal traffic was about 16 per cent below the maximum figure for 1872; while during the same decade railroad traffic had doubled, and the railroad proportion of grain receipts at New York had increased to 63 per cent.

In 1882 canal tolls were abolished, and the canals became free waterways, maintained by the state from general taxation. But this change did not produce any marked effects on the traffic, which remained at about the figures for 1882 until the end of the decade, while railroad traffic continued to increase. From 1890 to 1895 the canal traffic again declined to a notable degree, from 5,370,000 tons to 3,500,000 tons. Since then the tonnage has been approximately stationary, reaching a minimum of 3,138,000 tons in 1904, but rising again to 3,540,000 tons in 1906. Meanwhile, however, the aggregate freight tonnage on the New York railroads has continued to increase, until it has reached the enormous volume of over 100,000,000 tons, compared with which the canal traffic is insignificant.

Viewing the whole period from 1868 to 1906, the total canal traffic has declined from 6,442,000 tons to 3,540,000 tons. Of the several canals, the decrease in traffic has been most marked on the branch canals, discontinued in 1877, and on the Oswego Canal. The Champlain Canal has maintained its traffic to a larger degree than the others, having a tonnage of about 800,000 tons a year, compared with 1,120,000 tons in 1868. The Erie Canal has now approximately 2,000,000 tons a year, as against 3,346,000 tons in 1868.

When the canal traffic is compared with the railroad traffic, the decline of the former in comparative importance is unmistakable. While as late as 1869 the canal traffic, measured in ton-miles, was equal to the aggregate railroad traffic across the State of New York, at present the canal traffic is less than four per cent of the railroad traffic, and is less than one-tenth of the freight tonnage on either the New York Central or the Erie railroad.

The factors which have brought about this decline in canal transportation are, as usual in economic development, many and complex; and the different factors have been of widely varying importance. In respect to some important items of traffic—lumber and forest products, iron ore and coal—the change has been due largely to changes in the sources of supply,—the geographical relations of the raw materials and the markets being better suited to other lines of transportation than across the State of New York. With regard to other commodities—live-stock, fresh meats and highly manufactured goods—the rapidity of railroad, as compared with canal transportation, gives the former an unmistakable advantage. So far as these factors account for the changed conditions, they indicate a permanent advantage of the railroad over the water routes. But they do not give a complete explanation of the expansion of railroad traffic or the decline in canal traffic.

The decline in grain traffic on the canals, both in actual amount, and still more in the percentage of receipts at New York, cannot be explained by geographical changes in the source of production nor the importance of rapid transportation. The increase in receipts at Buffalo and New York—although less in recent years—shows that the route across the State of New York is still the most important for this traffic; and the decline of canal traffic here is due directly to the competition of railroads traversing the same section as the canals. This competition has been possible because of the reduction of rail rates until they at times have been almost as low as those on the canals; and it has been urged that this situation demonstrates that even for bulky commodities, where there is no need for special haste, the railroads can permanently offer practically as low rates and better service than the canals, and thus offer superior accommodations for all classes of traffic.

Further investigation, however, shows that while, during the past forty years, the railroads have made constant and large improvements, both in their physical condition and in their methods of administration, the canals have in both respects remained practically at a standstill. The road beds of the railroads have been completely rebuilt, permitting the use of larger cars and more powerful locomotives, increasing manifold the trainload units and reducing to a corresponding degree the expenses for each ton carried. At the same time the railroad lines have been consolidated under the control of large corporations, which reduce the expenses of general management and permit more economical methods of business management on a large scale.

On the other hand, no permanent improvements of any importance have been completed on the canals for more than forty years; while in many respects they are practically the same to-day as when first constructed. The same style of boats and the same system of animal towage have been in use since the first canal was constructed; and the size of the locks and canal prism, which limit the size of the boats, has remained unchanged since the completion of the former enlargement in 1862. And the traffic on the canals continues to be handled by single boatmen or small companies, owning at best but a few boats, with too little capital to make use of labor-saving devices, or to furnish terminal facilities, with no organized methods of securing business, and without sufficient financial standing to encourage the patronage of large shippers.

From these considerations it seems clear that the decline of canal traffic has been largely aided by the failure to improve the canals to keep pace with the railroads. And it is at least worth while to examine the possibilities of a revival of water traffic, if the physical condition and business methods of the canals were brought to a modern basis.

In 1899, Governor Roosevelt, of New York, appointed a committee of prominent business men and practical engineers to undertake such an investigation, and to formulate definitely the future canal policy of the state. And it is the recommendations of this committee, presented to the state legislature in 1900, which form the basis of the new barge canal project that is now under construction. The report of the committee emphatically opposed the abandonment of the canals, and doubted the expediency of a ship canal, which in any case would be a work for the national government. After the study of various projects the committee urged the construction of what would be practically a new series of canals and waterways, with important changes from the old routes, which should be navigable by steam-towed barges drawing ten feet of water and having a capacity of at least a thousand tons, or four times that of the largest boats that could use the existing canals. Preliminary estimates of the cost were also presented.

This report was followed by an exhaustive study of the engineering features of the project and the preparation of more detailed estimates by the state engineer and surveyor, which were submitted to the legislature in 1901, showing a total estimated cost of $101,000,000. Had Mr. Roosevelt continued as governor, energetic efforts would probably have been made to secure further action at that time. But his successor, Governor Odell, was not prepared to urge the matter; and not until April, 1903, was a statute passed, providing for an issue of bonds to the amount of $101,000,000 for the new canal plans, if approved (as required by the state constitution) by popular vote. After an active campaign the election in November was in favor of the work by the decisive vote of 673,010 to 427,698.

The scheme thus authorized has usually been called one for canal enlargement or canal improvement; but these terms fail to indicate fully the character of the work. More than one-half of the new water routes will be through river channels and lakes, and the canal work involves the construction of entirely new channels and locks, in many places along different routes from the present canals. On the principal route, or the Erie Canal, from Lake Erie to the Hudson River, the new channel will follow the line of the old canal, in the main, from the Niagara River, at Tonawanda, to the neighborhood of Lyons. Thence it takes a new route to the south of the Montezuma marshes, and in the Seneca and Oneida rivers and across Oneida Lake. Thence it crosses to the Mohawk River west of Rome, and then utilizes the bed of that river for most of the distance to Waterford on the Hudson. The new route removes the canal from the business districts of Rochester and Syracuse, but furnishes each of these cities with larger and better facilities for water traffic in the Genesee River and Lake Onondaga. The most important changes of level are at Lockport and Waterford. At the former a flight of two locks will replace the five now used; and at the latter, five locks, with a fall of thirty-four feet each, will take the place of the sixteen in the neighborhood of Cohoes on the old canal.

In addition to this main line, the Oswego River will be canalized from its junction with the Erie canal route to Lake Ontario, furnishing a waterway from that lake to the Hudson with only thirty-five miles of canal. The Hudson River will also be made navigable from Troy to Fort Edward; and from there a new channel will follow the line of the Champlain Canal to the lake of that name.[2]

On all of these routes a channel with a mimimum depth of twelve feet is to be constructed. On river sections the minimum bottom width will be 200 feet; on canal sections 75 feet. The locks, which are the principal factors in limiting the size of the vessels will be 328 feet in length and (by the latest plans) 45 feet in width. These will permit the passage at one time of two boats, each 150 feet long, 42 feet wide and drawing 10 feet of water, with a capacity of 1,500 tons; and such barges will be the most economical unit for transportation on the new routes. The size of the barges and the location of so much of the new routes in open water courses involves the disappearance of the primitive system of horse towage, and will make necessary the use of steam or other mechanical motive power. It is expected that vessels will usually go in fleets of four, one steamer towing three barges.

---

[2] STATISTICS OF NEW CANAL ROUTES.

	River and Lake. *Miles.*	*Canal and Locks.* *Miles.*	*Total.* *Miles.*
Erie Canal	174.83	167.83	343.66
Oswego Canal	18.04	4.80	22.84
Champlain Canal	38.18	28.16	66.34
Total	231.05	200.79	432.84

And under these conditions it is estimated that the trip from Buffalo to New York can be made in five days, in place of ten days as at present.

The estimates previously made covered in detail everything necessary for the construction operations, including not only excavation, locks and dams, but also bridges, harbors at Rochester and Syracuse, water supply, and navigation buoys and lights. The statute of 1903 authorized the letting of contracts, and directed the comptroller to issue bonds as needed for making payments. Careful provisions were made to secure public competitive bidding, and otherwise to prevent any mismanagement in connection with contracts. The governor was authorized to appoint a board of five expert civil engineers to advise the state officers during the progress of the work.

Following the popular vote, work was begun on the detailed specifications for contracts. Then bids were called for, and the first six contracts were made in April, 1905. Since then this work has been steadily continued. In December, 1907, contracts had been let covering 130 miles of the new routes, including twenty-eight locks and fifteen dams (out of a total of sixty-eight locks and thirty-three dams to be constructed), and aggregating $23,000,000. These contracts have been for the most part at lower prices than the estimates of 1900; and the prospects are thus good for completing the work within the total estimated cost. The largest stretches of the new routes contracted for are one on the Champlain Canal from Northumberland to Fort Edward, and on the main route along the Seneca and Oneida rivers. But plans and detailed specifications are practically completed for contracts to cover most of the remaining sections.

Construction work on the contracts already let is well under way, and several locks, including one of the largest locks near Waterford, are approaching completion. But scarcity of labor has delayed operations; and it will probably be at least six or eight years before the completion of the whole plan can be expected.

As to the probable results of this new canal system, only general estimates can of course be made. It has been calculated, however, that the cost of transportation in barges built for the new route will be less than twenty-five cents per ton, or below half a mill per ton mile, far below the cheapest railroad rates. The capacity of the canal will be about 30,000,000 tons a year; and on that tonnage the saving in cost of transportation as compared with the present canal would be $18,000,000 a year. Even with less than half the maximum tonnage, the direct saving will make possible a reduction in charges for transportation that will much more than offset the cost of the new undertaking.

But the direct reduction in the cost of transportation will be but a small part of the advantages from the new canals. And the indirect advantages, which cannot be even vaguely measured, will form by far the greatest economic gain, both to the State of New York and the country at large. Some of the tendencies that will be promoted may be at least indicated in a general way.

It is almost self-evident that the lower rates of freight by the new routes will prevent further diversion of the export trade in breadstuffs from New York, and will probably regain much of the trade already diverted to other ports, and re-establish the undisputed preeminence of New York in the export trade.

Of even greater importance are the possibilities in connection with the iron and steel industry. The raw materials can be laid down at Buffalo as cheaply as at Pittsburg,—the higher price for coal and coke at Buffalo being offset by the saving of rail haul of ore from Lake Erie points to Pittsburg. With an adequate waterway to the seaboard, iron and steel from Buffalo furnaces can be laid down for one-fourth of the present cost of carriage from the furnaces to the Atlantic. Opportunities will thus be offered for promoting the industrial development of western New York, for making New York harbor the distributing center for iron and steel products to the markets in the immediate vicinity, in New England and in foreign countries, and for developing on the Hudson River a large ship-building industry. It is not too much to say that the possibilities in these directions justify the comprehensive plans for the new canals fully as much as the prospect of transporting grain justified the construction of the first Erie Canal.

Nor is it impossible that, with the low rates of freight by the new canals, it will be found cheaper to ship west-bound coal by the indirect canal route than by the more direct railroad routes; and a large east-bound trade in bituminous coal to the manufacturing districts of New England may also be developed. Still more, it is at least probable that with the water routes now under construction, regular lines of steamers can be operated at as great a rate of speed as freight trains, and secure no inconsiderable amount of package freight business.

And to conclude, the large barges in the new canal routes will easily be able to traverse Long Island Sound to New England ports, and to make journeys to the Delaware and Chesapeake Bay,—a prospect which opens up almost unlimited possibilities for through water transportation from the lakes to these distant regions.

TRANSPORTATION ON THE GREAT LAKES

By Walter Thayer,
Eastern Manager Erie and Western Transportation Company,
Philadelphia.

The prominence of the Panama Canal in the affairs of the nation has naturally resulted in greater interest in transportation by inland waterways. This is especially noticeable in the wider interest now being taken in our greatest natural waterway, the Northern Lakes, and in the conditions under which freight is handled on them.

Although the Great Lakes were originally individually navigable for boats of considerable size, the rapids at Sault Ste. Marie, and the narrow and shallow stretches of water connecting Lake Erie with Lake Huron, and Lake Huron with Lake Superior, through which the greatest volume of tonnage must pass, presented many obstacles to the passage of vessels. An increasing traffic transported, and a consequent decreasing cost of transportation have accompanied the clearing of these impediments to navigation. The principal natural obstacles have been, and still are, the shallow water over the Lime Kiln Crossing, just south of Detroit, over the St. Clair flats not far above the same place, at the Straits of Mackinac, and, most important of all, the Sault Ste. Marie Rapids at the entrance to Lake Superior. The deepening by the United States Government of the first three stretches, and the building by the United States and Canada of the largest locks in the world at Sault Ste. Marie, where there is a total fall of about eighteen feet in three-quarters of a mile, now permit the passage of practically all the immense tonnage to and from Lake Superior. These improvements have perhaps yielded greater returns to this country than many times the same amount invested in any other character of public improvements.

The aim of this paper is to describe in a general way the origin, character and method of handling the tonnage of the Great Lakes.

Traffic and Vessel Tonnage on the Great Lakes

Contrary to the general understanding this traffic consists of relatively few commodities, most of which are products of the mines, the forests and the grain fields, surrounding or lying beyond the Great Lakes. Iron ore and coal constitute the bulk of the tonnage.

The tonnage of ships and traffic passing the locks at Sault Ste. Marie gives the clearest index of the business handled on the lakes, though these figures do not include the tonnage passing between Lake Michigan and the East. Over one-third of the tonnage of ships under the American flag and half the steamers of 1,000 tons and upwards are on the Great Lakes, and last year the total tonnage of freight east and westbound passing over the Lime Kiln Crossing below Detroit, which would include the business of both Lake Michigan and Lake Superior to and from Lake Erie, amounted to over 70,000,000 tons in a season of 230 days. Over 25,000 vessels passed Detroit, an average of one ship every thirteen minutes, and 200 tons of freight per minute for the season. These figures exceed those of any navigable stream in the world. The records taken at the Sault Ste. Marie locks, indicate in a general way the character of this tonnage and the relative importance of the commodities of which it is composed. Last year the total freight through the Soo amounted to 51,751,080 tons, carried in 22,155 boats. It was valued at $540,000,000, and was divided in the proportion about 80 per cent eastbound and about 20 per cent westbound. The principal eastbound business was:

Iron ore, 35,357,042 tons; wheat, 84,271,358 bushels; other grain, 54,341,155 bushels; flour, 6,495,350 barrels; copper, 107,633 tons.

Westbound:

Bituminous coal, 7,728,255 tons; anthracite coal, 1,011,275 tons; general mrchandise, not comparatively heavy, but of relatively large value.

The larger part of the total is iron ore and coal, and the eastbound movement over-shadows the westbound in tonnage, and also in what is known as "bulk" freight; *i. e.*, ore, coal and grain as distinguished from package freight or general merchandise. The relation between the tonnage of the several classes of freight does not correspond with the ratios of the values. In 1905 it was estimated that of the total value of traffic through the Soo during that year, the value of the iron ore and products of iron represented 27 per cent, cereals, 28 per cent, copper, 7 per cent, coal, both anthracite and bituminous, 5 per cent, lumber, 4 per cent, and all other products 28 per cent.

The total number of vessels on the Great Lakes early in 1907, with their gross registered tonnage, was as follows:

	Number.	Gross tonnage.
Sailing vesels	519	269,136
Steam vessels	1,844	1,841,438
Canal boats	480	50,599
Barges	209	73,259
Total	3,052	2,234,432

Deducting the canal boats, the number of vessels actually engaged in lake traffic was 2,572, and the gross tonnage 2,183,833. The percentage of sailing vessels is decreasing year by year, most of those now running are on Lake Michigan. In 1895 sailing vessels carried 30 per cent of the tonnage passing the Soo; in 1905 only 15 per cent. The craft on the lakes now range from the old boats of small size to the modern ore carriers made of steel, the latest of which are 605 feet over all, with sixty-foot beam, a depth of thirty-two feet, and a capacity of 13,000 tons. The barges referred to above are generally towed by steamers of the same line.

Iron Ore Traffic

The principal iron mining ranges are the Mesaba, Vermilion, Gogebic, Marquette and Menominee ranges, located in the territory adjacent to the western end of Lake Superior and in the upper peninsula of Michigan. The principal ore docks are located at Duluth, Superior, Two-Harbors, Escanaba and Marquette. The mines, as a rule, are located from ten to sixty miles back from the water, and the ore is hauled in specially constructed cars to the docks. These docks are so constructed that the cars from the mines are run out on them. The hoppers in the bottom of the cars are let down, and ore is discharged by gravity into pockets from the bottom of which iron chutes lead to the vessel lying alongside the dock. Through the hatches of the vessel the ore is chuted by gravity into the hold at as many points as there are hatches. In this way very little manual labor is necessary. A cargo of 9,277 tons of ore has been loaded into the steamer "E. J. Earling" at Mesaba Dock No. 4, at Duluth, in seventy minutes or on an average of 7,288 tons per hour.

Just here we have the key-note of the transportation service on the lakes, which is to secure for each vessel the least possible delay at port of loading or of discharge and consequently the greatest number of round trips possible in a season. The average number of trips that a modern vessel is able to make from the head of Lake Superior to Lake Erie is usually estimated at twenty per season, although with good dispatch at terminals some boats may make twenty-five, and even more. Every additional trip in a season reduces the average cost of transportation, and the entire carrying trade is ever pressing to reduce delay, whether at terminals or en route. To the genius displayed in devising plans to accomplish this result is due in no small degree the record the lakes have made in affording the cheapest transportation in the world.

Based on records at the Soo, in 1905, the average distance that freight was carried was 833.3 miles. The average cost was .85 mill per ton per mile, as against an estimated average cost for rail handling of about four mills per ton per mile. Ingenuity in effecting dispatch of boats made it possible for the steamer "W. E. Corey" to make thirty trips between Duluth and Lake Erie ports during the season of 1906, and in that time to carry the enormous total of 302,000 tons of iron ore.

The chief iron ore ranges, and to a large extent the vessels engaged in this trade, are owned by the larger iron and steel companies of the United States. The United States Steel Corporation, through the Pittsburg Steamship Company, owns the largest fleet on the lakes, 101 vessels with an aggregate tonnage of 368,165 tons gross register, or about 16 per cent of the total gross tonnage on the lakes. *Next* to them is the Gilchrist Transportation Company, with sixty-two vessels of 190,800 tons gross register; the latter, however, is not allied directly with the iron and steel interests. The chief steel companies, in addition to the United States Steel Corporation, now having ships on the lakes to carry their ore are the Lackawanna Steel Company, the Jones and Laughlin Steel Company, the Cambria Steel Company, the Tonawanda Iron and Steel Company.

The largest steamer on the lakes is the "Wm. B. Kerr," having a capacity of 14,000 tons of iron ore. She is the first of three sister boats, and there are others capable of handling from ten to twelve thousand tons.

The record cargo of ore is held by the steamer "Henry H. Rogers" from Escanaba to South Chicago, 13,333 tons, and over and over again this year greater cargoes of freight have been carried down the lakes than have ever gone out of the harbor of New York. The depth of water in New York harbor does not permit the largest ocean steamers to load to their full capacity, and the largest vessels are the fast passenger ships that carry but little freight.

The rate at which ore is carried on the lakes is practically fixed by the Pittsburg Steamship Company, owned by the United States Steel Corporation, which decides what rates these boats will carry for, and the price they will give others to carry the balance of the ore used by them. In 1907 it was seventy-five cents per ton from the head of Lake Superior to the ore dock on Lake Erie, and from Marquette seventy cents per ton; while from Escanaba to Lake Erie ports the charge was sixty cents per ton, and from Escanaba to Chicago, a haul entirely in Lake Michigan, only thirty-five cents per ton.

In 1906 the charge for unloading iron ore was twenty cents per ton, while vessels that required trimming in order to adjust their cargo, paid about three cents per ton for that service. A cargo of ore loaded in a modern ore carrier, however, does not require to be trimmed.

The docks for the discharge of ore, unless such ore is for some iron industry located directly on one of the lakes, are generally owned and operated by the railroads leading south and east from Lake Erie to the furnaces of Pittsburg and the Mahoning and Shenango Valleys, a distance of approximately 75 to 150 miles, or even farther, to the furnaces in Eastern Pennsylvania, where the ore is converted into iron and steel by the use of limestone and coke. Were it not for the necessity of using these articles in the manufacture of iron, and for the fact that iron ore, on account of the cheapness of lake transportation, is more economically brought to the coke, rather than the coke to the ore, the center of these industries might be in the neighborhood of Duluth rather than at Pittsburg; and the tonnage handled on the lakes might be comparatively insignificant.

The docks are located at Ashtabula, Cleveland, Conneaut, Buffalo, Lorain, Erie, Toledo, etc., all on the south shore of Lake Erie, and handle about 86 per cent of all the iron ore carried on the lakes. The above points rank in importance about in the order named, the largest number of tons handled in 1906 being at Ashtabula, with a total of 6,833,852 tons. The amount of ore received at Lake Erie ports was, in 1906, 32,076,757 tons, as compared with only 17,014,076 tons in 1901, a fact which furnishes a clear idea of the increase in the iron ore trade during the past few years. The difference between the total output and the receipts at Lake Erie ports is understood to be in the ore for furnaces at Detroit and South Chicago. Practically the entire success of a dock for receiving ore from a vessel, like a dock for loading vessels, depends on the ability to unload quickly and cheaply, and place in cars the tonnage that is daily brought alongside the docks by the gigantic ore carriers so constructed as to permit the hoisting and dumping by the most modern appliances, both electric and otherwise, of the greatest number of tons per hour in order to accomplish the quickest possible release of the vessel and effect the maximum saving in the cost of operation.

The efficiency of the machinery for unloading is shown by the record of the "George W. Perkins," 10,346 tons having been taken off in four hours and ten minutes, or at an average rate of 2,582 tons per hour. Moreover, this record is being approximated in the unloading of all similar boats, and it is the ambition of the managers of every dock to hold the unloading record. The records are being lowered year by year, and often more than once in a season.

Grain Traffic

Next in importance to the management of the ore traffic is the handling of grain. This trade is participated in by all kinds and sizes of vessels, and consequently there is more fluctuation in grain rates than in those for any other commodity. Grain originates beyond the western lake ports and is brought there by rail and placed in elevators. From the elevators it is shipped by vessel, generally to the ports of Lake Erie, the cost by lake being less than by rail. At the western lake ports elevators in connection with and often owned by the prominent eastern rail lines, receive the grain, and in due course load it into cars for export via eastern seaboard cities or for transportation to interior points. The rates per bushel for carrying grain depend absolutely on the number of boats available for the trade. Charters for the season, such as are made for ore in large quantities, are not characteristic of the grain-carrying trade. When grain is wanted for any particular vessel the rate depends on the supply of or demand for vessels; or, in other words, upon what happens to be the immediate condition or the number of the boats available at the time, or upon the desire of the shipper for immediate forwarding. The rate thus made per bushel for forwarding say, to Buffalo, is known as the "going rate," and is a matter of public information on the various boards of trade at the points of shipment and remains the standard until altered by a change in the conditions above mentioned. The average rate on wheat from Chicago to Buffalo was 1.7 cents per bushel in 1906, and from Duluth to Buffalo 2.2 cents per bushel. Grain is the only commodity that is occasionally handled by what are known as the package freight lines, which are engaged in through traffic in connection with railroad lines. The boats of these package freight lines as a rule take grain only when it is necessary or expedient to fill out their freight capacity. At such times they bid for grain in competition with the bulk carriers, none of it handled by the package lines, however, is taken on through rates to interior eastern points, but only to eastern lake port elevators, from which the grain is reforwarded to ultimate destination.

In loading grain from the elevators it is spouted into the holds of the vessels through the hatches, and unloaded by placing an elevator "leg" through the hatches into the vessel. This so-called leg is a contrivance on which is arranged an endless chain of buckets which scoop the grain out of the boat, carrying it up and into the elevator.

The largest grain cargo in number of bushels carried but not in tons, was 417,300 bushels of oats brought into Buffalo by the "Mary C. Elphicke."

The rates on which grain is carried by railroad from the eastern port elevator, if it goes to points east, are known as "At the East rates." This being a term used to indicate that the rate includes the cost of elevation from the vessel at eastern lake port and subsequent loading to cars, which service the ordinary rail rate would not include.

Lumber

Lumber is the other item of eastbound bulk freight on the lakes. The largest individual, although small, fleet in this trade is that of the Hines Lumber Company of Chicago. The rates this year have averaged, from Lake Superior to Lake Erie ports $2.25 per thousand feet, and from Lake Michigan to Lake Erie ports $2.00 per thousand feet. These rates are made by an association, with which practically all the lumber carriers are identified. The trade, however, seems to be falling off.

Westbound Coal Tonnage

Coal is practically the only article handled in bulk westbound. This business is peculiar in its method of handling, for coal is the only westbound cargo available for ore carriers, and were it not for coal these ore carriers would go light westbound, as they often do, in order that they may secure as many loads of ore as possible in a season. The result of this is that coal is taken west at rates that would otherwise be impossible. It is hard to estimate the value of this to the people of the Northwest, to whom the coal is a necessity. Coal is handled in and out of the ship without charge to the vessel, and last year the hard coal rate averaged, from Buffalo to Chicago, 46 cents and to Duluth 35 cents per ton. Soft coal averaged from Ohio ports to Chicago 46 cents and to Duluth 35 cents per ton. As practically all the ore boats are bound to Lake Superior the rates thence are lowest. Many of the big eastern coal companies have their own facilities and arrangements for handling coal at western lake ports.

Package Freight Service

We may now consider the relation of the package freight lines to the traffic of the lakes. These lines are engaged in carrying all kinds of merchandise in such packages and of such size as can be transferred from cars to boats. Practically all passenger steamers on the lakes also carry package freight, although all package freight lines do not carry passengers, and in fact the big package lines, in operation between eastern and western lake ports, with perhaps few exceptions, do not carry any passengers, being made up exclusively of package freight boats. The most modern of these carry about 5,000 tons, and, as a rule, all of this is loaded between decks or in the hold reached through openings in the decks, the freight being handled in and out through gangways in the sides of the boat and up and down gang planks from and to the docks.

There are several package freight lines, but they may be divided into two large classes:

First. Those that make short runs between nearby ports or ports on the same lake, or are engaged in carrying freight, generally not of considerable volume, for local delivery at the ports at which they call.

Second. Those lines that have through rates and prorating arrangements with the larger eastern and western rail lines, with which they connect.

The lines in the first class, on account of the generally local aspect of their service and of the fact that they are not usually a link in a through transportation service, may be passed over without discussion, in order that fuller consideration may be given to the other and more important class of package freight lines.

Although the business carried between ports on the Great Lakes by these lines is considerable in quantity and value, their chief traffic is that turned over to them as intermediate carriers between the rail lines leading east to the western lake ports of Chicago, Milwaukee, Gladstone and Duluth, etc., and west to the eastern lake ports of Buffalo, Erie, Cleveland, Detroit, Port Huron, etc.—this business to be again turned over by the lake lines to rail connections at the end of their route. To illustrate by a concrete example: business for rail and lake shipment may be taken in New York by the Pennsylvania Railroad to Erie and delivered to its lake connection, the Erie and Western Transportation Company, which takes the freight by water to Duluth or Chicago, as the case may be, and again turns it over to connecting rail lines to be delivered by them to consignees at St. Paul or Minneapolis. The same service may be performed in the other direction from Minneapolis, for example, to New York.

As these lines all have their rail connections, they may in turn be subdivided into two classes, according to the efficiency of their service. Some of them have direct routes, east of the lakes, for example, to and from New York, in connection with the big trunk line roads, such as the Pennsylvania Railroad and the New York Central, while others are dependent on a short water haul, like the National Despatch which takes business by water from New York to New London, Conn., and there turns it over to the Central Vermont Railroad, which in turn has a long haul in connection with the Grand Trunk to Depot Harbor, Canada, where it is at last delivered to boats to be carried to Chicago and points beyond. Another route is via canal boat through the Erie Canal from New York to Buffalo (requiring from twelve to fourteen days on the canal), where the freight is turned over to lake lines for forwarding west.

Rates by the Lake Lines

As a result of the different services thus offered there are three kinds of rates via the lakes: (1) westbound, from New York City, known as standard lake rates: (2) differential lake rates, and (3) canal and lake rates. These three are represented by the following rates in cents per hundred pounds, on the various classes, New York to Chicago:

	1	*2*	*3*	*4*	*5*	*6*
Standard Lake	.62	.54	.41	.30	.25	.21
Differential Lake	.52	.46	.35	.26	.22	.19
Canal and Lake	.42	.36	.29	.23	.21	.18

It will be seen how complicated must be the adjustment of rates by the various routes, and how greatly the charges must vary in accordance with the services performed, particularly when it is remembered that the service between these points is also performed by all-rail routes, differential rail routes, and by an ocean-and-rail route via Norfolk. These routes in turn have the following rates, first class, in cents per hundred pounds, New York to Chicago: all-rail, 75 cents; differential rail, 69 cents; ocean and rail, 65 cents.

During the season of open navigation a shipper in New York who wishes to forward a hundred-pound case of blankets to Chicago, has, among others, a choice of the following routes, in connection with each of which the charge would be in cents the amount mentioned: all-rail, 75 cents; differential rail, 69 cents; ocean and rail, 65 cents; standard lake, 62 cents; differential lake, 52 cents, and canal and lake, 42 cents.

Prominent among the commodities handled by the package lines, westbound, are sugar and cement. The eastbound business, however, is the heaviest and consists almost exclusively of flour, mill feed and copper, with occasional deck loads of shingles, and now and then grain if the vessels are unable to secure a full load of package freight.

Ownership and Rail Connections of Lake Lines

As between the standard and the differential lake lines, much the more important are the standard lake lines operating between Lake Erie and Lake Michigan or Lake Superior ports. These lines are, with the exception of the Soo line, generally owned and operated by the eastern trunk lines, as feeders at their eastern lake ports. The railroad-lake lines are:

	Operating to and from	*Owned by*
The Erie & Western Transportation Co. (Anchor Line)	Lake Michigan and Lake Superior.	The Pennsylvania R. R.
The Western Transit Co.	Lake Michigan and Lake Superior.	N. Y. C. & H. R. R. R.
The Union Steamboat Line.	Lake Michigan	Erie Railroad.
Mutual Transit Co.....	Lake Superior	Lehigh Valley R. R. D., L. & W. R. R. Erie R. R. N. Y. C. & H. R. R. R.
Lackawanna Transportation Co.	Lake Michigan	D., L. & W. R. R.
Lehigh Valley Transportation Co.	Lake Michigan	Lehigh Valley R. R.
Minneapolis, St. Paul & Buffalo Steamship Co. (Soo Line)	Lake Michigan	Minneapolis, St. Paul & Sault Ste. Marie R. R.

None of these lines, with the exception of the Anchor Line, operate passenger steamers. Like the carriers of bulk freight, every effort is made by the owners of these lines to accomplish as many trips in a season as possible, and the boats are consequently, with the exception of passenger boats during the passenger season, not operated on any schedule but are turned as rapidly as possible. To accomplish this large warehouses are maintained at eastern lake ports by these lines, in order that the cargoes of eastbound vessels may be immediately unloaded for subsequent shipment east. These warehouses are equipped with various devices to secure the greatest possible dispatch in the loading and unloading of boats, and in many cases separate houses are devoted to the east and westbound business. At the western lake ports the facilities for through business are provided by the delivering rail lines at whose terminals the package freight lines call for or deliver business routed in their care.

On account of the slower speed of handling and of the increased number of transfers incident to business shipped by rail and lake, as compared with all-rail, the rates are lower via the lakes than via the all-rail routes. The present difference is illustrated by the 17½ cent rate per hundred pounds on flour from Chicago to New York, via lake and rail as compared with 19½ cents per hundred pounds all-rail, and by the westbound rate of 23½ cents per hundred pounds, New York to Chicago, on sugar via rail and lake, as compared with 26 cents per hundred pounds all-rail. The difference between these figures, in each case, is known as a differential. It represents the amount under the all-rail rate charged by the standard rail lines, which experience and long custom has established as being considered the difference between the value of the two kinds of service. The retail prices of granulated sugar and flour, per hundred pounds, being $5.50 and $3.50 respectively, it will be seen what a comparatively small part the cost of transportation must play in the price of such commodities to the consumer.

It is difficult to explain the various rates in existence over the several routes between the East and West; but it should be noted that the service via the lakes requires a transfer, where none is necessary when shipments are all-rail, and that there has grown up a fixed relation between the rates all-rail and the rates rail and lake, based on relative speeds, and that when reductions or advances are made in all-rail rates, consequent reductions or advances follow in the rates rail and lake, either eastbound or westbound. These principles of adjustment are further carried out in changes in rates by the differential rail-and-lake lines, and the canal lines.

The various standard lake lines were primarily considered as feeders for their rail connections, and in order that other railroads not equipped with lake lines may not reap the advantage of the tonnage thus provided, through prorating arrangements have been made only between the lake lines and their rail owners, or such other railroads as the owners of the lake line think it profitable to connect with.

Summary—Importance of Service of Package Freight Lines

The foregoing discussion shows that by far the largest part of the tonnage of the lakes consists of ore, coal, grain, etc., handled in bulk by vessels ready to go from port to port for the highest compensation they can secure for their services. On account of the great quantities handled, and the ease with which it is loaded and unloaded, and also on account of the fact that the government has provided a free way and free harbors, the rates for transportation on the lakes are so low as to make unfair a comparison of those rates with average charges per ton per mile via rail lines.

The bulk freight handled on the Great Lakes consists almost exclusively of raw materials which can be moved at such low rates as to exclude competition by all-rail routes. With the package freight business the situation is different and there is active rivalry between the rail and water lines. The charges for package freight made by rail and water lines must be approximately equal because the difference in costs of the services by competing routes is relatively small.

Although the tonnage of package freight handled on the Great Lakes is small as compared with the volume of bulk traffic, the service performed by the package freight steamers is highly important. The package freight lake lines assist their rail connections by adding to the volume and regularity of their traffic, and afford the shipping public the choice between various routes. The shorter and more expensive routes provide a quicker service; the more circuitous, and to the shipper the less expensive routes, a slower service.

There is a business demand for both of these services. The package freight lines on the lakes perform a function of value to the carriers and to the public, and occupy an important place in the elaborate and delicately adjusted system of transportation that has grown up in the highly developed industrial section of the United States lying between the Mississippi River and the north Atlantic seaboard.

THE IMPROVEMENT OF THE OHIO RIVER

By John L. Vance,
President Ohio Valley Improvement Association, Columbus, O.

In a discussion of the improvement of the Ohio river, it will not be inappropriate to state at the outset the claims on which the six Ohio river states—Pennsylvania, West Virginia, Ohio, Kentucky, Indiana and Illinois—base their demands upon the general government for the canalization of the river from Pittsburg to its junction with the Mississippi at Cairo, a distance of one thousand miles as the stream meanders. The Ohio alone, of all navigable rivers in the United States, carries tonnage from its source to its mouth. It drains the richest valley in the civilized world; and the river might be of the greatest possible benefit not alone to the commercial, manufacturing, mining and agricultural industries of the six states, but of the greatest possible value to the trade and commerce of the United States, and, unquestionably, the greatest of all feeders to the Panama Canal.

The manufactures of Pennsylvania, West Virginia, Ohio, Kentucky, Indiana and Illinois, in 1905, amounted to $4,979,453,665 in value. Of that total Pennsylvania contributed $1,955,551,332; Illinois, $1,410,342,129; Ohio, $960,811,857; Kentucky, $150,753,966; Indiana, $393,954,305; and West Virginia, $99,040,076. The three crops of corn, wheat and hay were of the total farm value of $646,090,621, with other crops in proportion. The wealth of the six states was $25,941,897,242, distributed as follows: Pennsylvania, $9,315,140,116; Illinois, $6,976,476,400; Ohio, $5,010,004,453; Indiana, $2,606,493,004; Kentucky, $1,365,130,718; and West Virginia, $650,652,551. The total wealth of the United States was $88,517,306,775; the six Ohio river states contain approximately one-third of the entire wealth of the country, while the remaining members of the Union, forty states and territories, contributed the remaining two-thirds.

During the fiscal year ending June 30, 1905, according to the report of the Commissioner of Internal Revenue, the six Ohio river states paid into the Federal treasury not only one full half of all internal revenue collected, but $16,000,000 in excess of that full half.

Such are the Ohio river states, which are demanding the canalization of the Ohio from Pittsburg to Cairo to a depth of nine feet. It is a demand made in the interests not alone of their trade and commerce but in the name of the trade and commerce of the entire country. It is a demand, primarily, it is true, of the Ohio river states—for they furnish the coal for the markets of the South; the coal and the natural gas that heats the furnaces and supplies the forges; that lights and heats the schools, the churches, and the dwellings. They produce the salt, the fire clay, the timber, the ores. They manufacture the pottery, the steel rails, the structural iron and steel, and finished glass and wood products of the country. They stand at the doors of the government confident in the justice of their demands, and in the knowledge that the benefit to them would be of immeasurable benefit to their sister states, especially to those of the great valleys between the Rockies and the Appalachian ranges, but also of immeasurable value to the trade and the commerce of all other sections of the country.

As early as 1804 the legislature of Kentucky incorporated the company organized for the purpose of constructing the Louisville and Portland Canal, with a capital stock of $600,000, for the purpose of aiding navigation by avoiding the falls of the Ohio at Louisville. Of the capital stock, 3,665 shares of the par value of $100 were held by the citizens of New Hampshire, Massachusetts, New York, Pennsylvania, Maryland, Missouri and Kentucky, with the Federal Government holding 2,333 shares. Although contracts were soon let for the work, it was not begun until 1825, and not until December, 1830, was the canal opened for navigation. During the first twelve months of its operation 406 steamboats and 375 flatboats, with an aggregate tonnage of 76,323 tons, passed through the canal, while for the month of July, 1907, the tonnage passing through the canal on steamers and barges was 1,100,533 tons. For the corresponding month of 1906 there were 805,672 tons. The canal was originally under state control, but is now under the control of the Federal Government.

About 1825 Colonel Long, of the engineer corps, in charge of the improvement of the Ohio, put into execution his plan of constructing wing dams, instead of the older plan of cutting channels through sand-bars and shoals, and of that work Hall[1] says: "To cut a channel through a bank of sand would not be impracticable, but the excavation thus made would be filled up by the deposits of the next flood. About ten years ago Colonel Long, of the topographical engineers, was instructed by the government to make an experiment, and adopted the plan of throwing out wing dams from each side of the river, so as to confine the current within narrow bounds and to give sufficient volume to wash a channel for itself. He spent one summer in constructing such a work at Henderson, 200 miles below Louisville. The dams were constructed of piles driven into the sand and rising but a few inches above the surface. Not a trace of the work of Colonel Long remains to-day, and Hall well says that "the objection to any of these measures is that they have not been attempted on a scale of magnitude becoming their importance, and urged with all the energy becoming a great nation."

Wing dams were constructed at many points along the river. But experience demonstrated that they would not furnish the relief sought—would not maintain a sufficient stage of water to meet the demands of commerce. Dredge boats were brought into service, but they were found to be unavailing. Hence, the work of improving the Ohio languished. For many years the efforts in its behalf were sporadic and confined to local necessities, real or fancied. The sneer of Randolph, of Roanoke, that the Ohio was a stream which was dried up during six months of the year and frozen over during the other six months, together with "pork barrel" insinuations, not only stayed the improvement of the Ohio, but of all rivers. The coming of the railroad added to the neglect with which the Ohio, the greatest tonnage-bearing stream in the United States, was treated.

One important enterprise, however, was undertaken—the building of a lock and movable dam at Davis Island, about five and a half miles below Pittsburg. This dam was undertaken and completed for the purpose of furnishing a pool six feet in depth, in which towboats and barges might find safe harbor and be ready to take advantage of a "coal boat rise" and move down the river to the markets on the Ohio and the Mississippi. But this improvement was made in a half-hearted way, and with no belief that it would become one in a chain of similar locks and movable dams that, when built along the river's entire length, would give a permanent and reliable depth of nine feet of water throughout the year. Appropriations for the Davis Island dam were slow; the work was prosecuted without energy. Finally, when completed, it was found to work successfully; the pool was formed, and the advantage of even this beginning of something "permanent" exceeded all expectations; but with the completion of this lock and movable dam, permanent efforts to improve the river practically ceased.

---

[1] "Statistics of West Cincinnati," 1836.

Whether it was because of the total inadequacy of the railroad as a means of transportation, or whether it was because of an awakening of the Ohio Valley to the immeasurable capacities of the Ohio river as a tonnage bearer is immaterial to the present purpose; the awakening came, resulting in the organization of the Ohio Valley Improvement Association, at Cincinnati, in 1895. Since that time there has been persistent and successful effort for the permanent improvement of the river to a nine-foot stage from Pittsburg to Cairo by a series of locks and movable dams.

At the first meeting of the association there were delegates present representing the mining, manufacturing, commercial, agricultural and the river interests of the Ohio Valley. They were men who fully realized that the permanent improvement of the Ohio to a navigable stage ample for the largest boats was imperatively demanded by every community and interest in the Ohio and Mississippi Valleys. The association has grown in numbers and in influence with the passing of every year. Annual conventions have been held regularly at important places along the river, the last one at Wheeling, W. Va., on the 14th and 15th of November, 1907.

The association at first was of the opinion that a six-foot stage would be sufficient; but experience demonstrated otherwise, and in 1902 the nine-foot stage became the platform of the association. It is gratifying to be able to state that the nine-foot stage has been accepted as the true standard of improvement of the Ohio, and the Congress of the United States is now irrevocably committed to it.

I have said that the Ohio is unique in the fact that it is the only stream carrying tonnage from its source to its mouth. It not only carries tonnage from its source to its mouth, but it supplies almost wholly the tonnage on the Mississippi from Cairo to New Orleans, for on the great Mississippi to-day there is no packet plying between St. Louis and New Orleans, nor any between Memphis and New Orleans, save the packets that steam out of the Ohio into the Mississippi.

Of the work that has been done for the permanent improvement of the Ohio since the organization of the Ohio Valley Improvement Association in 1895, only a brief summary can be given. The first important action by Congress was an appropriation for the survey and fixing of sites for locks and movable dams from Pittsburg to the mouth of the Muskingum river. This was followed by a survey of like character from the mouth of the Muskingum to the mouth of the Big Miami. By these two surveys it was found necessary to construct and sites were fixed for thirty-seven locks and movable dams.

On this stretch of river, covering about one-half its entire length, appropriations have been made for the prosecution of the work on more than one-third of the locks and dams. The first six, immediately below Pittsburg, including Davis Island dam, are practically completed; locks and dams numbered 8, 11, 13, 18 and 37 are nearing completion; land for locks and dams numbered 7 and 19 has been secured, and partial appropriation for work on 19 has been made; full appropriation ($1,200,000), cash and contract, has been made for No. 26, below the mouth of the Great Kanawha and Gallipolis, and the engineers are now engaged in final surveys to fix the exact location. The locks and dams named, below No. 6, were provided for by reason of the fact that they were considered of first importance. With the completion of No. 37 (about ten miles below Cincinnati) a harbor nearly thirty miles in length will be made, which will be of supreme importance to Cincinnati and her large interests. When No. 26 is completed the product of the coal fields of the Kanawha Valley may be transported to the markets of the Ohio Valley regularly by lowering the wickets on the Kanawha River and those of Nos. 26 and 37, thus flushing the river and giving the required water.

By direction of Congress the survey of the Ohio was completed from the mouth of the Big Miami to Cairo by a board of United States engineers composed of Lieutenant-Colonels Lockwood, Sears and Ruffner, and Majors Zinn and Sibert. Statistics of the tonnage of the Ohio were collected and tabulated at the request of the board, by the Ohio Valley Improvement Association.

The report of this board was filed in the War Department on the 4th of January, 1907, and was referred to the board of engineers for rivers and harbors, commonly known as the board of review. The report will no doubt be presented to Congress at its approaching session.

It is probable that the greatest work accomplished by the Ohio Valley Improvement Association was in its invitation to the Committee on Rivers and Harbors of the House of Representatives to make a tour of the Ohio from Pittsburg to Cairo on the steamer Queen City, commanded by Captain J. F. Ellison, secretary of the association and also secretary of the National Rivers and Harbors Congress. The trip was made in daylight, and covered ten days. That the tour was a source of the most valuable information to the committee is undoubted, and the fact was fully and most cordially conceded by all of the number. That it was productive of great good to the work in which the association is engaged is equally undoubted. The committee saw, from source to mouth, a magnificent river 1,000 miles in length, with steamers not only passing down stream laden with merchandise, but steamers alone, and with barges coming from local ports and from New Orleans and other southern points loaded with sugar, molasses, cotton, lumber or material for pulp mills—a stream on which coal and iron and other heavy products are carried at the phenomenally low rate of one-third of a mill per ton per mile; a stream on the banks of which, from Pittsburg to Cairo, there was an endless panorama of mining and manufacturing operations; a valley than which none is richer in agricultural products in the United States. They saw a stream which, during the fiscal year ending June 30, 1906, carried—according to official reports—more than 4,500,000 passengers and more than 15,000,000 tons of freight; a river on whose waters, not always navigable in their unimproved state, the steamer Sprague, the leviathan of western waters, took in safety from Pittsburg to Cairo, and from Cairo to New Orleans, in one tow of coal, no less than 70,000 tons—a tow of freight which would require not less than 2,333 coal cars, making a train fifteen miles in length, not including the locomotive engines required to draw it. They saw a river which, more than any other river in the country, has demonstrated that it is not present tonnage carried that determines its merits or its standing before the Committee on Rivers and Harbors of the House, but that it is the tonnage-bearing capacity of a stream improved that determines its standing.

The benefits that have come with the completion of each lock and movable dam on the Ohio accrue to every mine and factory in the valley. With the completion of the nine-foot stage from Pittsburg to Cairo, the valley of the Ohio—the very heart of the commercial and industrial life of the country—would not depend solely on railroads for transporting the ores from the mines nor on the finished product from the factories to the markets. To-day the merchant, the farmer, the manufacturer, and the miner find the value of their products at zero too often because of inability of the railway to furnish him transportation to a market—for the value of the article of commerce is measured by its ability to reach a market. With the Ohio permanently improved, merchant and manufacturer, miner and farmer, would have ready access at all seasons of the year to a market, and the consumer would profit none the less than the producer.

MISSISSIPPI IMPROVEMENTS AND TRAFFIC PROSPECTS.

By R. B. Way, Ph.D.,
Assistant Professor of Political Science and History, Beloit College,
Beloit, Wis.

The execution of the proposed improvements and extensions of the waterways of the Mississippi Valley will necessitate eventually the expenditure of hundreds of millions of dollars. To determine whether such an expenditure will be warranted, it is necessary to examine the problems involved in the undertakings, the cost of the improvements and their values as determined from an estimate of the lands reclaimed, freight rates saved and traffic secured.

Problems of River Regulation

In presenting the results of such an inquiry, a general discussion of the present obstacles to the free navigation of the Mississippi and the agencies which will assist in the improvement of the river, irrespective of the great projects now proposed, will precede the detailed study of the particular sections of the river.

Thus far, the frequent shifting of its channels, the sappings of its banks, the building of bars, the setting of snags and sawyers, the destruction of landings by the changing elevations of the water, and the interference of levees, bridges and other engineering works, have checked all efforts to increase the river traffic to meet the general industrial growth of the Mississippi Valley.

Each year an average of four hundred million tons of sediment is carried down to the gulf, occasioning great difficulties in controlling the stream. Bars are formed by the silt; and, by the deposition of the coarser débris, the river's course is dammed. The floating sediment scours the channel and wears away the obstructing banks with any acceleration in the current of the stream. As much of this sediment comes from the headwaters of each of the tributaries of the Mississippi, the main river can never be cleared until adequate provision is made for clearing these tributaries. The sediment-free streams can then be made tractable for navigation and their power convertible for industrial purposes.

In the effort to clear the Mississippi the establishment of forest reserves and national parks will also be helpful. The forests, by conserving the rainfall, will check the tendency of the mountain streams to gather in torrents and carry into the headwaters of the tributaries vast quantities of sediment. Even the fringe of willows or beds of cottonwoods along each smaller stream will aid much if the local authorities will encourage their retention.

The municipal system of waterworks can be made, to a greater extent, a part of the general plan for clearing the river and improving the navigation. Each waterworks reservoir is a settling basin and the control of the catchment area checks soil wash and minimizes the amount of sediment carried by the stream. A definite and comprehensive system of co-operation between the national and municipal governments in the furtherance of every system of waterworks is yet to be established.

As more people see how irrigation incidentally reduces stormfloods and thaw freshets and retains much of the contained sediments, there will be a fuller appreciation of the fact that the irrigating and reclamation of the western lands will do much in bringing under control portions of the Mississippi river system. The above shows how important it is even from the standpoint of navigation, to adopt, as suggested by President Roosevelt in his recent Memphis speech, "a single comprehensive scheme for meeting all the demands so far as possible at the same time and by the same means."

In the endeavor to protect the flood plains the close connection which the improvement of one section of the river bears to that of another is very evident. The lower Mississippi during the period of its early settlement occasionally shifted its channel and, running over broad bottom lands, fixed in time its position by building natural levees of silt. Then again it broke through these barriers.

With the increase in population in the upper basin of the river and the reckless practice pursued of destroying the belts of timberlands along the rivers and running the furrows down slope regardless of soil wash, the quantity of sediment in the lower river was augmented, the clogging of the channels was hastened, and the devastation by floods increased. In order to protect the millions of fertile acres of cane, corn and cotton the levee system was inaugurated. Upon this millions have been spent until now, in 1907, about 75 per cent of the banks of the river south of Cape Girardeau are leveed.[1]

The Mississippi River Commission, in their report of 1906, recommended the completion of the levee system. There are, however, some general difficulties involved in the work. As the waters of the river are confined within narrower limits, a vertical expansion of the water must occur. Therefore the levees must always exceed in height by two to four feet the highest known elevations of the waters. It is always possible that the next flood may be higher than any previous one. Some engineers tell us that if the river be contracted between rigid walls, the velocity of the stream will be so increased that up-stream navigation will be impossible and down-stream dangerous.[2] Others maintain that the sand bars and the sinuosity of the river are nature's provision against the violence of the stream.

Improvement Authorized in River and Harbor Bill, 1907

Three lines of procedure for the improvement of the Mississippi are designated in the recently passed River and Harbor Bill:[3]

(1) Appropriations were voted for the general improvements of the river, for the extension of the levee system and the improvement of navigation. This includes the maintenance of a navigable channel for at least 200 feet in width and 9 feet in depth from Cairo to the gulf.

(2) Appropriations for the improvement of the river from the mouth of the Ohio to the mouth of the Missouri.

(3) The appointment of a board to report on the practicability and desirability of constructing a navigable channel fourteen feet deep and of suitable width from St. Louis to the gulf either by the improvement of the river or by a canal or canals for a part of the route.

For study the river may be divided into three sections: (1)

---

[1] Chief of Engineers' Report, 1906, Pt. II, 2485, states that nearly 4,960 miles of levees had been built up to May 1, 1906.

[2] Cong. Records, p. 2168.

[3] H. R. Bill 24,991.

The lower Mississippi northward to the mouth of the Ohio; (2) The middle section, from Cairo to the mouth of the Missouri;[4] (3) The upper Mississippi, north of the Missouri.

The Lower Mississippi—The Levees

In the lower Mississippi navigation is impeded by shifting channels, destruction of the banks and the deposition of snags and sediments. The results obtained from dredging have fully established the fact that it is entirely feasible to maintain a channel 9 feet in depth and at least 250 feet wide at all stages by means of a suitable equipment of dredges. Success, however, rests upon an uninterrupted prosecution of the work which can only be secured by the government's continually appropriating the necessary funds. To secure the confidence of the capitalist who must provide the money for building the river craft and the steamboat man who navigates, an adequate channel must be maintained for a period of years.

In the reclamation of the valuable lowlands much levee work remains to be done, as was demonstrated by the flood of 1903. One-fourth of the Yazoo basin was under water, one-half of the City of Greenville, Mississippi, inundated, six thousand people driven from their homes and traffic suspended on the Yazoo and Mississippi Valley Railroad for twenty days, and on the Riverside Division for forty.[5] As the levee grows in volume, the loss per mile from the carrying away of its banks becomes more and more serious and, if the same rate of destruction continues,[6] the time will come when the annual revenues will not be sufficient to build new levees to replace those that cave in. It will, therefore, be necessary to continue the appropriations at an increased ratio for a number of years. The caving of the levee banks occurs in the bends, and the action takes place at intervals. The damage can be stopped only by revetment or by building a new levee on ground further from the river. The first method is so expensive that it is not favored by the commission except in a few cases: when the levee threatened is so situated that a new location cannot be formed except at a great distance from the river, where extremely valuable interests would be sacrificed by the changed line, where there is a lake, an impassable swamp or a town lying immediately behind the present levee which would be thrown open to the flow by the change.[7]

---

[4] Twenty-eight miles north of St. Louis.

[5] Miss. River Com. Report, 1904, p. 23.

[6] Since Dec., 1903, 17 per cent of the total length of controlling line has been abandoned. Cong. Records, 41, Pt. 3, 2385.

To prevent the bends being cut off is another object of revetment. The importance of this phase of the work is seen in the disastrous effect of a cut-off where the bend is, say, fifteen miles around and one mile across. As the fall in the river is about six inches in a mile we would have, where the cut-off is made, a fall of seven and one-half feet in a mile, disturbing the existing conditions for forty to fifty miles above and below. Experience has shown that this shortening would be only temporary as the river would begin to eat in the offshore and in a very few years the length of the cut-off would be reached. This makes it imperative that both shores shall be protected.

But the higher levees, required for the confinement of the flood discharges from Cairo downward, will necessitate the expenditure of an amount of money which will be more and more beyond the ability of the riparian communities to bear. Although it now costs about $200,000 a mile for revetment work, it is estimated that if the government would undertake energetically, on a large scale, the revetment of the uncompleted portions of the five hundred miles of caving banks from Cairo to the mouth of the Red River, it would cost less than fifty million dollars. This completed, less money would have to be spent in dredging.

There is yet much work to be done in the New Orleans Harbor. Here an ever-present danger of a sudden collapse in certain portions exists. Ample funds must be provided for the extension and completion of the revetment.

The Middle Section of the River

For the middle section of the Mississippi River, the plan of 1881 arranged for the confinement of the flow to a single channel, having approximately a width of 2,500 feet below St. Louis. The secondary channels were to be closed and new banks built out where the natural width was excessive. For this purpose permeable dikes or hurdles of piling were to be used to collect and hold the solid matter that is carried in suspension or rolled on the bottom of the river.[8] In 1896 the plan was modified by substituting dredging as the method of clearing the channel, and by 1903 dredging plants were established.[9]

---

[7] Cong. Records, 41, Pt. 3, 2385.

In the River and Harbor Bill, as passed, only $250,000 was voted for the work in this section of the river. Mayor Burr and others state that it will take all of that amount to keep the dredges going with nothing left for levee or revetment work.[10] The sum of $650,000, as recommended by General Mackenzie, Chief of Engineers, as the amount to be expended for the fiscal year ending June 30, 1908, was plead for in both houses of congress, but was rejected by the Committee on Rivers and Harbors of the lower House.

The objections to the larger appropriations were stated by Chairman Burton[11] of the House Committee on Rivers and Harbors. They were: (1) More money had been spent on the Mississippi River within the last twenty years per annum than is expended by Germany on the Rhine, whose traffic is thirty to forty million tons a year, while the total traffic of the middle section of the Mississippi dropped from 1,260,000 tons to 440,000 tons in the last ten years. (2) Extensive plans of improvements were adopted in 1881 at an estimated cost of $16,000,000. This proved ineffectual. After twenty-three years nearly eleven millions had been expended, when the estimate for the completion of the work was given as twenty millions, four millions more than the original estimate. (3) For nearly three years there have been eight feet of water, the amount now sought, yet traffic is diminishing. For the year 1904 and the three years previous $650,000 a year was provided. (4) Freight rate from St. Louis to New Orleans on grain is only one-third more per ton mile to-day than it is from Duluth to Buffalo. With this low rate practically no grain is shipped from St. Louis to New Orleans.[12] (5) Until it was determined whether or not the proposed deep-water channel from Chicago to the gulf necessitated canalization along the middle section of the river, it was unwise to expend more money for the section.[13]

---

[8] Engineer's Report, 1906, Pt. I, 462.

[9] Engineer's Report, 1904, 2144, *et seq.*

[10] Cong. Records, 41, Pt. 5, 4095.

[11] They were stated in the House, reiterated in the conference with the Senate Committee and re-stated before the Senate by Senator Frye Feb. 27, 1907. See Cong. Rec., 41, Pt. 5, 4088.

[12] Cong. Records, 41, 2429 (Feb. 11, 1907).

[13] *Ibid.*

Lakes to Gulf Waterway

Closely associated with the improvement of the middle section are the projects for the fourteen-foot deep-water channels from Chicago to St. Louis and thence to the gulf. Chicago, having completed the drainage canal with a view to its navigation, desires to secure its utmost efficiency by inducing the general government to complete a deep-water channel to St. Louis. United States surveyors have estimated the cost of a fourteen-foot waterway from Lockport, the terminus of the drainage canal, to the mouth of the Illinois River as a little over 23½ million dollars.[14] The Illinois law providing for the drainage canal, stated that whenever the United States Government shall improve the Des Plaines and Illinois rivers, making them capable of receiving a flow of 600,000 cubic feet per minute and assume all damages arising from any extra flow above 300,000 cubic feet per minute, the drainage canal shall be likewise enlarged and turned over to the general government for navigable purposes.

Certain difficulties are to be noted in the plan for the general government's undertaking the project. At a recent meeting of the Rivers and Harbors Committee at Niagara Falls, both the president and chief engineer of the sanitary district board stated that to carry off the sewerage of Chicago, a flow of 840,000 cubic feet per minute would be required.[15] In 1905-06, when the flow from the drainage canal was but 250,000 cubic feet per minute, 224 lawsuits were brought against the trustees of the sanitary district of Chicago and damages claimed amounting to $4,409,180. What damages the government will have to assume when the necessary 840,000 feet of water is turned in, is not known.[16]

How the level of the Great Lakes will be affected by this flow, is another problem. The enormous expense then of dredging the lakes can only be avoided and their present level maintained, by placing dams and other controlling works across the Detroit and Niagara rivers. This can be done only at great expense and after an international agreement.

Important water rights have been developed along the route of the proposed deep-water channel by private corporations. In furthering the plans for the improvement of the rivers for navigation, it is necessary to cause the relinquishment of these rights. The State of Illinois is at present meeting with considerable opposition in its endeavor to remove the dams which obstruct the work upon the portion of the deep-water channel in which the state is interested.

---

[14] Report upon Survey of Des Plaines and Illinois Rivers, 1905, p. 10. House Doc. 263, Fifty-ninth Cong., First Session.

[15] Cong. Rec., 41, p. 2299.

[16] Report upon Survey of Des Plaines and Illinois Rivers, 1905, p. 12. See also Cong. Rec. 41, p. 2299.

The deep-water project from Chicago to the Mississippi will necessitate the enlargement and deepening of the channel from Grafton to St. Louis, or else the building of a lateral canal connecting these points. Engineers are not yet agreed as to the practicability of the canalization of the Mississippi. The Committee on Rivers and Harbors was undoubtedly wise in holding up the work to await the development of other projects and to give the engineers time to study the problems further in the hope of a closer approach of unity in the recommendations.

The Reservoirs of the Upper River

The upper Mississippi has certain unique projects. The principal one is the construction of reservoirs at the headwaters of the river, between Brainerd and Grand Rapids, Minnesota. These are planned to collect the surplus water from precipitation of the winter, spring and early summer to be systematically released during the navigable season so as to benefit the navigation of the river below.

A present difficulty in the efficient management of the reservoir system, as now constructed, is the great distance of the reservoirs from the head of navigation at St. Paul. Trouble arises in getting the water down to St. Paul in time to make good a sudden decrease in the natural flow at that point. To remedy this, use is made of the small available supplies in Sandy Lake and Pine River. To secure a much larger supply, which is needed, it is proposed to build other reservoirs which will deliver to St. Paul several billion more cubic feet of water from a point 103 miles nearer.[17]

The reservoirs affect seven different interests which often conflict; the steamboat navigation below and above St. Paul, logging, mills at and above Minneapolis, riparian owners on the river and those on the reservoirs. Each is unquestionably better off with than without the reservoirs; in fact the supply and regulation of water secured by the system greatly benefit the 434 miles of navigable river between Minneapolis and Cass Lake.

---

[17] Engineer's Report, 1906, Pt. II, p. 1438.

The different interests affected by the reservoir system selfishly desire it to be managed exclusively for their own benefit. Owing to this fact the consideration and settlement of the various complaints against the system constitute at present a problem in the improvement of the upper Mississippi. These complaints came from three sources: (1) Riparian interests above the dam; (2) the flooded district in the vicinity of Aitkin, Minnesota; (3) the milling interest at Grand Rapids, Minnesota.

Of the first, it may be said that the reservoir system does flood the lands, and the fluctuation in the water surface thus occasioned results in damage. Consequently, the government must acquire the land overflowed, purchase the right to overflow it, or pay damages for property destroyed. In acquiring the right to overflow the land, the government is performing its full duty in the matter.

In extending and completing the reservoir system, the government came into dispute with the Indians in the Leach Lake Reservations. These Indians have resorted to growing wild rice and hay around the reservoirs. Although the government paid them $150,000[18] for the right to overflow their land, a fair compensation, they, naturally improvident, continue to depend on additional government aid.

Besides the complaints of the Indians, dissatisfaction has arisen among those financially interested in the lumber company at Cass Lake. The J. Neils Lumber Company, organized after the United States Government had secured the flowage rights on the lands occupied by the company's mills, feel entitled to damages by the overflow because they were not notified of the government's right when they bought the land. Though complaints come to the engineering board from other localities, the government seems to be adjusting equitably every legitimate outstanding claim.

A general demand to abandon the reservoir system comes from those impressed by the loss occasioned by the withdrawal of the land from settlement and the permanent obstacle to its development.

---

[18] Act Aug. 19, 1900.

However, the benefits to the various interests below the dam are so great that, even if the flowage lands above were vacated by the government, the advantages to the community at large could never be so important as those secured by the reservoirs.[19]

A few words regarding the situation at Aitkin, Minnesota, will aid in understanding the problems met in the improvement of the river at that point. Owing to the low banks, flat slope and excessive curvature of the Mississippi in this section a very fertile area of 100,000 acres is subject to overflow. The flood of 1905 caused an actual damage of $50,000 and such dire indirect losses that the government of Minnesota called for relief contributions. A number of farms were abandoned and the crops for an entire season over a large tract of country were destroyed. The people of Aitkin, rejecting the engineer board's statement that the cause was the exceptional rainfall, firmly believe that the reservoir system occasioned the disasters. Hence the engineer board must now convince the people[20] of the real cause and make all possible alterations in the system to appease them.

The great paper industry of Grand Rapids, Minnesota, with its mills about two and one-half miles below the Pokegama reservoir dam, complain of insufficient water to run during the non-navigation seasons. It appears that the company located its mills and constructed its mill wheels with the view of taking advantage of the reservoir system. But now it is found that the requirements for navigation, the main purpose of the system, do not always coincide with those of the mill. The whole contention of the paper company amounts to this: that the government shall abandon the purposes for which the reservoirs were built and convert them into mill ponds, for the benefit of the company. In this clash it is clearly shown that the interests above the dams can never be equally as well served as those below. The lower interests are much more important and must take the precedent. However, to secure the largest amount of support for its method of improving the upper river, the government must do all in its power to treat the paper industry with the utmost liberality. This it seems to be doing, although at present obliged to reject the radical demands of the Grand Rapids interests.

---

[19] See Engineer's Report, 1906, Pt. II, 1161-70.

[20] See Engineer's Report, 1906, Pt. II, 1459-61 for careful examination of the question.

The River from St. Paul to St. Louis

From St. Paul to the mouth of the Missouri River, the improvements consist of the removal of snags, some dredging and such special harbor and levee work as is needed. Originally the channel between these two points was such that in low stages the larger boats were unable to proceed farther up stream than La Crosse or Winona. The present project for the improvement of this section proposes a contraction of the waterway so as to afford a channel of sufficient width and a depth of four and one-half feet at low water, to be eventually increased to six feet by further contraction. For the last few years such a channel has been secured. Expenditures are still demanded in order to obtain an increased depth at certain points and make the necessary repairs to dams and shore protections.

It has now become the fixed policy of the Committee on Rivers and Harbors to recommend no appropriations for the improvement of any waterway until the tonnage of the section shows sufficient magnitude. Furthermore, there must exist reasonable grounds for expecting that such an amount of the tonnage will follow the waterway as to make the business returns therefrom commensurate with the expenditure for the improvement.

Water Power—Upper River

Thus far, the advantages derived above St. Paul from the reservoirs have been largely such as accrue to the floating of logs.[21] In time the logging interests will relinquish the river to navigation and large quantities of merchandise will be transported to market from the upper regions which are not reached by railroads. With the completion of the locks and dams now being built, Minneapolis will become practically the head of navigation on the river.

The storage capacity of the five reservoirs, constructed and maintained by the government at a cost of $1,250,000, is 96 billion cubic feet of water. It is estimated that each billion cubic feet is at present worth to the milling interests of Minnesota $13,000 a year or a total of $1,218,000. The total valuation of water-power development in operation on the Mississippi between Minneapolis and the reservoirs is now about $225,000. Additional powers worth $900,000 are being built about Minneapolis while others amounting to nearly $3,000,000 are under consideration. It is maintained that the reservoir system has already directly benefited the milling interests of Minneapolis to the extent of $500,000; for, here over 16,000,000 barrels of flour are produced yearly by water power at less than one cent a barrel, while by steam it would cost five cents.[22]

---

[21] Traffic between Grand Rapids and Brainerd, Minn., in 1905, was 460 tons of freight and 1,586,000 tons of logs, valued at $5,436,000. Engineer's Report, 1906, II, 1140.

River Traffic and Rates above St. Louis

For the year 1905, 4,089,319 tons of freight passed between St. Paul and the mouth of the Missouri River.[23] Up to June 30, 1906, the government had spent $11,673,356.76 on improving this portion of the river, and $660,000 for maintaining the improvements.[24] At first sight the expense might appear entirely out of proportion to the traffic, but, by the great saving in freight rates, the expenditure was well made.

In 1905, the railroads on both banks of the river from St. Louis to St. Paul charged 50 per cent more than the steamboats; while the railroad rate to an inland point, having no water competition, but about the same distance from St. Louis, was 200 per cent higher.[25] There can no longer be any doubt that water rates have a controlling influence upon railroad rates. Abundant proof of this is given in the table on page 158.[26]

It is difficult to overestimate the vast possibilities for manufacturing industries in the upper Mississippi Valley. Wisconsin alone with its 1,400 lakes and rivers represents immense potential power. This power, conserved and increased, will vastly augment the amount of manufactured merchandise which must seek exportation.

One may reasonably doubt the assertion of Governor Van Sant, of Minnesota, made in 1904, to the effect that with a six-foot stage in low water, practically all the flour for export in Minneapolis will find an outlet down the Mississippi to the gulf.[27] The average freight rate on wheat from New Orleans to Liverpool for

---

[22] Engineer's Report, 1906, II, 1470.

[23] *Ibid.* I, 465.

[24] *Ibid.*

[25] *Ibid.* 466.

[26] Report of the Upper Mississippi River Association, 1905, p. 167. See similar table in Report, 1902.

[27] Proceedings of Upper Mississippi River Improvement Association, 1904, p. 49.

FREIGHT RATES SHOWING COMPARATIVE BASIS BETWEEN POINTS HAVING WATER COMPETITION AND INLAND POINTS WHICH DO NOT OBTAIN THE BENEFIT OF WATER RATES.

From	To	Miles.	Route.	CLASSES.				
				1	2	3	4	5
St. Louis . . .	St. Paul, Minn.	573	Rail	$0.63	$.052½	$0.42	$0.26	$0.21
St. Louis . . .	St. Paul, Minn.	720	Boat	.40	.34	.27	.17	.14
St. Louis . . .	Oklahoma City, O. T.	543	Rail	1.30	1.09	.97	.84	.67
St. Louis . . .	Dubuque, Iowa.	340	Rail	.45	.37	.29	.23	.18
St. Louis . . .	Dubuque, Iowa.	439	Boat	.33	.26	.20	.15	.10
St. Louis . . .	Topeka, Kas.	347	Rail	.89	.69	.54	.42	.32
St. Louis . . .	Quincy, Ill.	140	Rail	.32	.27	.21	.15	.10
St. Louis . . .	Quincy, Ill.	161	Boat	.26	.22	.17	.12	.08
St. Louis . . .	Moberly, Mo.	148	Rail	.50	.39	.29	.23	.18
St. Louis . . .	Hannibal, Mo.	120	Rail	.30	.25	.19	.14	.09½
St. Louis . . .	Hannibal, Mo.	141	Boat	.23	.18	.14	.10	.07
St. Louis . . .	Mexico, Mo.	110	Rail	.43	.34½	.26	.21	.16
St. Louis . . .	Burlington, Iowa.	214	Rail	.44	.35	.26	.18	.12
St. Louis . . .	Burlington, Iowa.	240	Boat	.33	.26	.20	.13½	.09
Quincy, Ill...	Kansas City, Mo.	226	Rail	.60	.45	.35	.27	.22
St. Louis . . .	Peoria, Ill.	165	Rail	.25	.20	.16	.12	.11
St. Louis . . .	Poplar Bluff, Mo.	166	Rail	.52	.44	.36	.31	.26
St. Louis . . .	Cape Girardeau, Mo. .	131	Rail	.25	.20	.15	.12½	.12½
St. Louis . . .	Salem, Mo.	127	Rail	.46	.39	.32	.28	.23
St. Louis . . .	Memphis, Tenn.	305	Rail	.65	.50	.45	.35	.30
St. Louis . . .	Hickory Valley, Tenn.	302	Rail	.96	.82	.67	.55	.45
St. Louis . . .	New Orleans, La.	705	Rail	.00	.75	.65	.50	.40
St. Louis . . .	Terrell, Texas.	669	Rail	1.37	1.21	1.04	.96	.75
New York . .	Chicago.	913	Rail	.75	.65	.50	.35	.25
Chicago	New Orleans.	923	Rail	1.10	.90	.76	.58	.47
Chicago	Kansas City.	458	Rail	.80	.65	.45	.32	.27
New York . .	Chicago (Lake and Rail).	. . . .	. . . .	.59	.51	.40	.29	.25

the years 1899-03, inclusive, was 6.55 cents per bushel, while from New York it was only 3.07 cents.[28] In 1905 the rate for flour from New Orleans to Liverpool was 15 cents per hundred pounds, while from New York it was 5.63 cents.[29]

The grain and flour required in the internal trade of the Mississippi would seek the improved waterway. In addition there would be an up-stream traffic in lumber, sugar, molasses, rice and imports from Asia and South America. The hardwood lumber in such demand in the furniture factories in the Middle West could be transported on the river.

The claim that coal will be brought down the Ohio and up the Mississippi can be believed; that it will be carried clear to St.

---

[28] Digest of Hearings on Regulation of Railway Rates, Senate Doc. No. 244, Fifty-ninth Congress, First Session, p. 498, 493.

[29] *Ibid*, 498, 501.

Paul and Minneapolis, may be doubted. A greater amount of this coal could reach Wisconsin and Minnesota towns by the improved waterways. The problem of coal transportation is always complicated by the fact that railroads will often carry coal to the distant Northwest at a great sacrifice in order to secure a return cargo. At present it is hauled from Ashtabula, Ohio, to Duluth by water at the rate of thirty-five cents a ton so as to secure a return cargo for the iron ore vessels.

In spite of all the statistics of the traffic upon the upper Mississippi, no great amount of actual commerce is shown. As yet this section of the river does not have the amount naturally belonging to it. To some extent this is due to the uncertainty of its navigation, making it impossible to induce capital to build the necessary steam crafts. Commerce did not come to the railroads until they were completed, and it will not come to the river until the improvements are made.

Traffic Below St. Louis

The tables on page 160 give the statistics regarding the traffic on the middle and lower section of the river:

For the fiscal year ending June 30, 1904, the three great railroads between Chicago and St. Louis transported 449,115 tons of freight to St. Louis and returned with 633,182 tons, making a total of 1,082,297 tons in both directions.[30] Though far short of the amount moved in 1906, this indicates, to some extent, what a share the projected deep waterway to St. Louis might have in the traffic. The meats, cereals, hardy fruits, manufactured merchandise made from iron and steel, and the furniture of the Middle West will seek the new route in reaching the southern states. In return the tobacco, rice, nuts, and lumber will be sent to the north. All non-perishable goods of small money value in proportion to their weight will go by water rather than by rail. Then, too, the waterway can carry the raw materials for building and manufacturing purposes which a more costly means of conveying would leave untouched.

With the completion of the deep waterway from the lakes to the gulf, the Lake Michigan traffic would have a route to the

---

[30] Engineer's Report of Survey of Des Plaines and Illinois Rivers. House Doc 2, 63, Fifty-Ninth Congress, First Session (1905-06), 15.

COMMERCIAL STATISTICS FOR CALENDAR YEAR 1905.[31]

[Report of the Chief of Engineers, U. S. Army.]

TABLE I.

Tonnage Between—	Number of passengers.	Receipts and Shipments, in Tons.					
		Grain and its products.	Cotton.	Cotton seed and its products.	Live stock.	Coal and coke.	Lumber.
St. Louis and Cairo	61,232	50,441	1,991	912	21,048	131,756	21,143
Cairo and Memphis	41,696	51,123	9,573	11,069	200	1,328,930	242,076
Memphis and Vicksburg	114,179	47,960	66,556	64,699	4,091	1,097,758	128,697
Vicksburg and New Orleans	84,225	26,881	25,349	39,554	3,945	1,080,075	33,203

Tonnage Between—	Receipts and Shipments, in Tons.					
	Logs.	Iron, steel and metals.	Groceries and provisions.	Stone, sand and gravel.	Miscellanous and unclassified.	Total.
St. Louis and Cairo	101,111	135	18,958	....	69,526	417,021
Cairo and Memphis	486,051	55,153	4,844	5,800	43,550	2,238,363
Memphis and Vicksburg	334,499	16,409	30,471	1[illegible],336	*45,354	1,855,830
Vicksburg and New Orleans	233,388	24,062	86,833	526,852	†382,932	2,462,974

* Includes 4,742 tons of oil. † Includes 259,296 tons of oil.

Note.—Each stretch is treated as a separate river, and tonnage carried between ports on different stretches will appear in the statistics of all intervening stretches. Consequently the sum of the tonnage carried in the four stretches does not represent the total traffic on the river as a whole.

TABLE II.—Receipts and Shipments at Principal Ports.

Ports.	Passengers carried in and out of port.	Receipts and Shipments, in Tons.					
		Grain and its products.	Cotton.	Cotton seed and its products.	Live stock.	Coal and coke.	Lumber.
St. Louis, Mo.	*961,618	24,497	1,991	855	21,017	125,755	21,132
Memphis, Tenn	73,744	12,362	26,724	18,786	2,217	132,410	18,067
Vicksburg, Miss†	60,583	35,880	42,158	47,665	719	53,803	14,414
New Orleans, La.‡	21,967	733,866	583,090	390,147	7,522	1,053,204	345,100

Ports.	Receipts and Shipments, in Tons.					
	Logs.	Iron, steel and metals.	Groceries and provisions.	Stone, sand and gravel.	Miscellaneous and unclassified.	Total.
St. Louis, Mo.	64,323	135	17,146	7,000	86,574	370,425
Memphis, Tenn	200,800	980	10,044	....	61,637	484,045
Vicksburg, Miss.†	72,500	33	13,865	3,000	15,503	200,660
New Orleans, La.‡	208,858	78,836	704,046	6,750	§802,513	5,104,708

* Includes 832,500 passengers in local excursion traffic.
† The traffic with the Yazoo River and its tributaries not included.
‡ Includes exports and imports and the domestic coastwise traffic as far as reported.
§ Includes 262,703 tons of oil.

---

[31] Engineer's Report, 1906, II. 2514.

ocean closed only 22 per cent of the twelve months in the place of the present waterway which is blocked with ice 40 per cent of the year. The wholesale merchants are practically barred, by the prohibitory railroad freight rates, from the territory south of the Ohio River both east and west of the Mississippi. The coming improvements of the Ohio, Cumberland, Tennessee, Red and Arkansas rivers will open the entire South to the northern trade.

With an improved Mississippi and the deep-water channel made to Chicago, a lively contest may be waged as to which route the grain from St. Louis will take for exportation to Liverpool. The average rate charged for the years 1899-1903, inclusive, from St. Louis to Liverpool via New Orleans, was 10.99 cents[32] and via New York it was 16.33 cents.[33] For the same period the rate from Chicago to Liverpool via the lakes and the Erie Canal was 9.15 cents.[34] If the improved Mississippi will make a corresponding reduction in the rate via New Orleans that the deep waterway will occasion via New York, grain will continue to go to New Orleans from the St. Louis market. In 1905, the flour rate from Kansas City to Liverpool via New York, rail, lake and canal, was 30.24 cents per 100 pounds, while it was only 26.15 cents via New Orleans.[35] With an improved Missouri, Mississippi and the deep-water channel to Chicago the grain from Kansas City might have a choice of two routes.

Upon the completion of the Panama Canal there will be a vast increase in the traffic moving southward to the gulf. With the deepened upper Mississippi, the channel connecting the Mississippi with the Great Lakes via the Illinois River, and the improved channel from St. Louis to the gulf, the Middle West will be put into direct communication with the cities of the Pacific Coast as well as with those of Hawaii, the Philippines, Japan, China, and western South America. A saving of between 8,700 to 8,946 miles will be made between Chicago and San Francisco and Asiatic ports via the Mississippi and the Panama Canal. The central part of the Middle West will be 590 miles nearer San Francisco and other Pacific ports than New York. The people of South America are already purchasers in United States to the extent of $40,000,000 a year, and a great share of this is from the Middle West. Every effort is being made to secure more of this trade at the expense of Germany.

---

[32] Hearings on Rail. Rates, p. 498.

[33] *Ibid.*

[34] *Ibid.*, p. 493.

[35] *Ibid.*, p. 505.

When direct water communications are established between the Mississippi and South and Central America so that vessels loaded at South American ports can, without breaking bulk, discharge their cargoes at ports on the upper Mississippi or the Great Lakes, an inestimable increase in the trade of the Central West will occur.

Summary

Some idea of the magnitude of the difficulties involved in the improvement of the Mississippi has been given. The necessity of awaiting for full reports and estimates before inaugurating the greater projects has been shown. Sufficient evidence has been presented, however, to establish the fact that the improvements will be of great value. Added emphasis is given to this when the congestion of freight in all parts of the country in 1906 is recalled. James J. Hill asserted that it would take 73,333 miles of railroads, constructed during the ensuing five years, and costing $5,500,000,000 to relieve the situation. Railroad corporations have since met with such difficulties in securing capital during the past two years as to delay even modest extensions of their lines. Relief can come only by the government's undertaking a national system of improvement of its navigable waters. It is the best way that can be adopted for further regulating rail rates and assisting in extending the transportation facilities of the country.

As a business proposition it will pay great returns if the rivers are made freight carriers and rate regulators.[36] The census report of 1900 states that the cost of transportation on all railroads of the United States averaged 7.5 mills per ton per mile, on the Ohio River to Cincinnati .32 mill, and on the lower Mississippi .1 mill. If James J. Hill's statement be correct that railroad transportation cannot be performed at much less than one-half cent a ton per mile while by steel barge freight can be carried on a deep channeled river at the cost of one mill, then water navigation will continue the cheapest for a large class of commodities.

---

[36] Cong. Records 41, p. 2289. Speech of Joseph E. Ransdell in House of Representatives, January 31, 1907.

But the friends of the Mississippi River improvements must remember that similar arguments are at present being advanced for the improvement of many other rivers in the country.[37] Every effort must be made to intensify the spirit of co-operation which has exhibited itself in recent conventions. A solid majority must be secured in the next Congress in favor of much larger appropriations for the various meritorious projects, and the work must be inaugurated upon a broad national basis which will make adequate provisions for improvements in every section of the country or failure will result. In that event the Panama Canal even will not enable us to maintain our commercial position among the nations of the world.

---

[37] See Debates on recent River and Harbor Appropriation Bill in Cong. Records 41, also Proceedings of National Rivers and Harbors Congress, 1906.

WATER-POWER IN THE MISSISSIPPI VALLEY[1]

By Mr. Calvin O. Althouse,
Instructor in the Department of Commerce, Central High School, Philadelphia.

The first period in the history of manufacturing in the United States was that in which the streams of New England gave sites to small villages with single factories dependent upon water-power. During a subsequent period, coal was the concentrating factor. Industrial development in the near future will again depend largely upon water-power. But that water-power is a resource which man can easily dissipate has not yet struck home. The advantage of electricity as a means of transmitting and applying power so developed is furnishing a mighty stimulus to this development.

It has been estimated that in the South the slopes adjacent to the Appalachian highland are capable of developing 3,000,000 horse-power, and that in three states, North Carolina, South Carolina and Georgia, more than 90,000 horse-power has been developed in cotton mills alone. A tremendous aggregate of power is dispersed along the upper water of the streams and their hundreds of tributaries which find outlet into the Ohio and Mississippi rivers. In estimating the resources of the region, all these smaller powers should be counted in, for they can supply power for local industries, for lighting small towns and for transportation on local lines.

In the highlands which send their streams precipitously into the Tennessee, the Cumberland and the many other streams merging into the Ohio and finally the Mississippi, two general plans of improvement suggest themselves for utilizing the water:

(*a*) By building high stone and concrete dams, 20, 50 or even 100 feet high across the narrow gorges with wheel pits at or near the dam, and the construction of power houses immediately above the wheels. In this manner a fall of water equivalent to the height of the dam is obtained, and the steep descent of the channel below the dam assures the quick removal of the water from beneath the wheels.

---

[1] The paper discusses the possibilities of developing water-power in the Mississippi Valley, and locates many of the power sites, but not all of them.—Editor.

(*b*) Constructing lower dams, and conveying the water either through open canals or closed pipes for a distance along the banks of the stream until a sufficient fall can be obtained, at which point the power house is constructed.

In mountainous regions generally, many of the available sources are remotely situated and not within easy reach of railroads or good wagon roads. Again, in many instances, the gorges are so narrow and the country so rough that the local conditions are not favorable to the establishment of adjacent manufacturing plants. Hence, the necessity of transmitting the power electrically to points on the railroads where locations for the establishment of manufacturing plants and transportation facilities are within easy reach.

The location of many of our manufacturing towns has been decided by desirable and ample water-powers, or the abundance and cheapness of fuel without regard to nearness of raw materials, or the markets for the finished product. Therefore, as the item of cost of labor lessens by use of improvements in machinery and methods of manufacture, the item of cost of transportation constitutes a larger percentage of the cost of the finished product; hence, the question of conveying the power to the material or conveying both power and material to some advantageous point grows in importance.

Conveyance of power by the older form of belting and shafting was not only extremely local and inefficient but on the inside of buildings was regarded as unsanitary, more costly to operate and occupied too much room. Then, too, this method lost from 40 to 50 per cent of its power, whilst electricity loses only from 10 to 18 per cent in transmission. Electricity transmitted not in excess of forty or fifty miles will cost, regarding all the elements of installing wheels, generators, switchboards, etc., from $10.00 to $40.00 per horse-power, while steam, under similar conditions, is estimated at from $45.00 to $70.00 per horse-power. Electrically transmitted power has undisputed advantage for manufacturing purposes, and it will be a tremendous factor in developing non-utilized water-power, making industrial communities where none exist, and giving wider horizon to cities already feeling the quickened pulse beat of new commercial life.

Were the flow of the rivers constant throughout the year the problem of hydro-electric power would be comparatively easy, but as changes occur it becomes necessary for us to bear in mind the difference between "ordinary low flow" and "average flow."

Ordinary low flow is intended to represent the average flow during a period of twenty or thirty days in the late summer or fall, when the river is lowest. A record taken for a period over five years shows the month of lowest stage to be September.

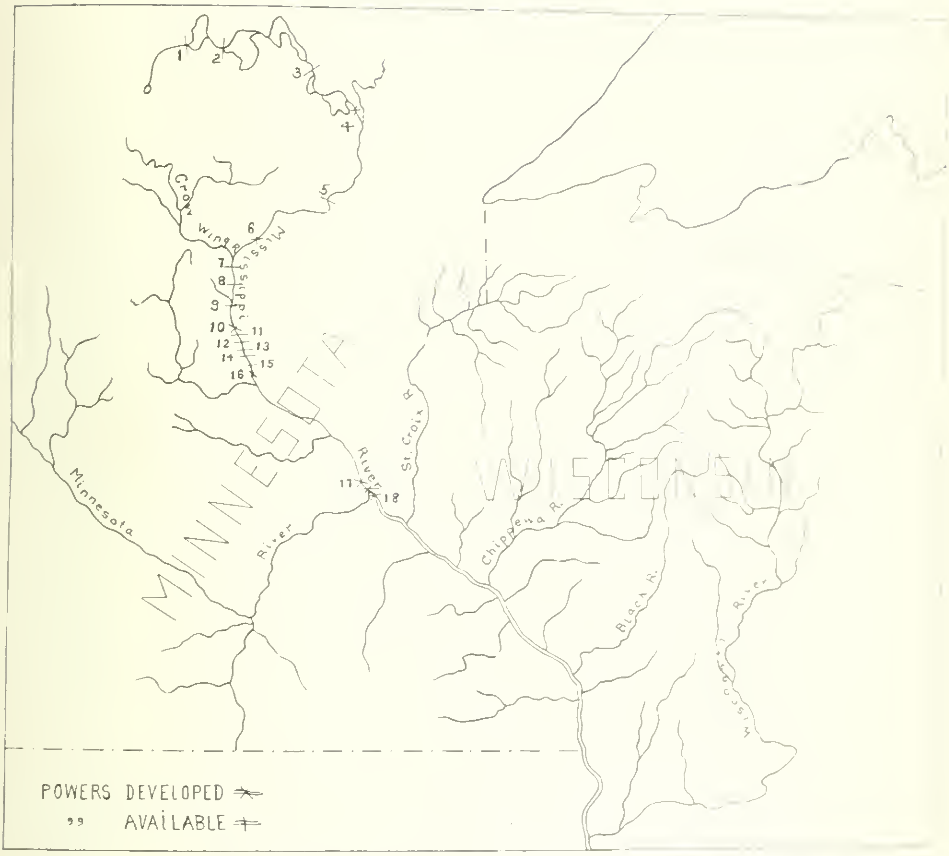
Average flow represents the stage of the river assuming it to remain constant from one day to another all the year through. It is practically the actual condition that would exist if a perfect and uniform system of reservoirs was applied throughout the Mississippi Valley, so that the floods could be held back and distributed during the low-water seasons. This question of average flow is of great importance in considering water powers.

Already, as a result of the transmission of power by electricity, the tendency in the cotton mills of the South is toward building larger and more efficient plants instead of the many small mills using the water powers direct. As in the seaboard region of the South the use of water powers has developed rapidly and established marvelous industrial changes, so we may anticipate similar transformation in the valley of the Mississippi.

The Mississippi River System

The drainage area of the Mississippi is estimated variously from 1,261,000 square miles to 1,390,000 square miles; the length, from mouth to source, if Lake Itasca be regarded as its beginning, is 2,616 miles, while from the mouth to the source of its greatest tributary, the Missouri, it is estimated as 4,200 miles. Its average width is 1,000 feet, but in the lower reaches of the river it varies from one-half to three-quarters of a mile, and at flood season it is far in excess of these latter figures. The maximum depth of the channel in the lower half of the river is from 60 feet to 125 feet at the mouth. The maximum flood level is about fifty-two feet above low water on the lower section, diminishing to fifteen feet at the mouth. The source of the Mississippi is 1,680 feet above sea level. The average total discharge from the basin is 675,000 cubic feet per second.

The major axis of the basin is 1,700 miles long, extending southeast from the northwest portion of Montana, through the Dakotas, Nebraska, Missouri, and Tennessee, down



1. Benidji.
2. Cass Lake.
3. Pokegama Falls.
4. Grand Rapids.
5. Big Eddy Rapids.
6. Brainerd.
7. Olmsted's Bar.
8. Conradi's Shoals.
9. Elk Rapids.
10. Little Falls.
11. Pike's Rapids.
12. Cashe's Rips.
13. McDougal's Rips.
14. Blanchard's Rips.
15. Watab Rapids.
16. Sauk Rapids.
17. Minneapolis.
18. St. Paul.

into the northwest corner of the State of Alabama, with one arm going off northeast into the Allegheny Mountains. The basin takes in practically thirty states and a part of the Dominion of Canada. With regard to areas drained and the actual volume of the streams the basin may be divided into four grand divisions: The Missouri basin, the basin of the Arkansas and Red rivers, the Ohio basin, and the basin of the upper Mississippi.

From the west toward the east the land slopes south and east from an elevation of 4,000 to 6,000 feet at the base of the mountains, diminishing to less than 1,000 feet at the Mississippi. In the eastern section, a large portion is but slightly elevated. In eastern Kentucky and Tennessee occur the Cumberland plateau and other tablelands. The average elevation is from 500 feet, in southern Illinois and Indiana, to 800 feet in the northern portions of these states. The average elevation of Ohio is about 1,000 feet. In Kentucky and Tennessee the surface varies from 300 feet, near the Mississippi, to from 600 to 1,000 feet in the central portions. On the Cumberland plateau the height averages 3,000 feet, and in the East Tennessee Valley from 600 feet to 2,000 feet. The average elevation in the immediate region of the sources is from 1,200 to 1,600 feet in Minnesota and Wisconsin. The lay of the land is particularly well adapted to the development of water powers in the upper regions of the rivers of the Mississippi system. There are not a few conspicuous places where tremendous power can and is being developed. There are many lesser sites which, when taken together, make an astounding aggregate.

Available Power on Upper Mississippi

From Lake Itasca to Lake Bemidji there is an average fall of nine feet to the mile, the power under a head of ten feet at an ordinary low stage above Lake Bemidji is estimated at eighty-seven theoretical horse-power, enough to run a good-sized custom mill. Below this point is to be found another site between Lake Bemidji and Cass Lake, where 220 to 475 horse-power could be developed. Two other powers of sufficient importance to command notice are found in the next stretch of 326 miles, namely, at Pokegama Falls and Grand Rapids.

At Pokegama Falls the development of from 1,170 theoretical horse-power to 2,477 theoretical horse-power is possible, which, with increased height of dam could be increased ultimately to 5,200 horse-power. This power is usable for most of the year. At Grand Rapids a dam of six feet could be built, which would not interfere with Pokegama Falls, and develop, under varying conditions, from 700 to 1,500 theoretical horse-power.

From Grand Rapids to Little Falls, a distance of 220 miles, there is no concentrated descent which could be rendered available. Immediately above Little Falls there are several rapids which, under improved conditions, would render appreciable quantities of power. At Big Eddy Rapids it would be possible to develop from 2,200 to 5,000 theoretical horse-power, depending upon the flow. Just four miles above Brainerd, on the Northern Pacific Railroad, is another vantage point where a drop of some four and a half feet is found in a distance of 4,100 feet; the stage of the river under similar conditions is slightly greater than at Big Eddy Rapids, so that practically an equivalent of power might be produced.

At Olmsted's Bar, about eleven and one-half miles below the junction of Crow Wing River with the Mississippi, is the possibility of from 3,780 to 8,630 horse-power. Conradi's Shoals and Elk Rapids, between Olmsted's Bar and Little Falls, afford opportunity for the production of several thousand horse-power, it being suggested that the aggregate would exceed that at Olmsted's Bar, or in excess of 8,000 theoretical horse-power. At Little Falls, 106 miles above Minneapolis by water and ninety miles by rail, the river has a descent of 7.3 feet in 2,100 feet. The configuration of the local surroundings is such that at the bottom of the falls the banks on either side of the stream range from twenty feet to twenty-seven feet above the surface of the water.

A number of years ago several mills were operated at this location, but those in charge chose rather poor sites, letting the excellent place at the crest of the falls go by default. The stream here has been pronounced navigable, and the consent of the government would be necessary before a dam could be built, but this could be easily arranged by providing sluicing for logs and perhaps a lock for steamboats and barges. With a dam of ten feet 3,951 theoretical horse-power would be obtained under ordinary low flow, and with average flow 8,606 theoretical horse-power. By raising the dam to sixteen feet and concentrating effort at this point, power to the extent of 14,500 horse-power could be developed, but it might impair Elk Rapids above, which would produce in the neighborhood of 3,000 horse-power. The difference would be such, however, as to favor Little Falls.

From Little Falls to Sauk Rapids, thirty-one miles distant, the descent of the river is rapid, the average slope being 3.1 feet per mile. The chief points of concentration are Pike Rapids, Cashe's Rips, McDougal's Rips, Blanchard's Rips and Watab Rapids. It has been proposed to build dams, one at Cashe's Island, with a head of thirteen feet, and another at Blanchard's Rips, with a head of ten feet. The first would probably flood back to Pike Rapids and the second to about the foot of Cashe's Rips. The flow being essentially the same here as at Little Falls, the ordinary low flow would produce, under three feet head, 5,136 theoretical horse-power, and under ten feet, 3,951 theoretical horse-power; with the average flow the result would be respectively 11,660 horse-power and 8,696 horse-power. The total fall from the head of Little Falls to Sauk Rapids is ninety-five feet, and there are several places, according to James L. Greenleaf, Assistant Professor in the School of Mines, Columbia University, New York, where utilization of power could be made at little cost.

In the stream between St. Paul and the headwaters dams now exist at the following places: One between St. Paul and Minneapolis, two at Minneapolis, one at Watab Rapids, one at Little Falls, one at Brainerd, one at Grand Rapids. And Congress has authorized in addition; one between St. Paul and Minneapolis, one at Ostego, one at Monticello, one at St. Augusta, two at Sauk Rapids, one at Pike Rapids, one at Bemidji. Also one on the Crow Wing River below Gull Lake.

The influence of the reservoirs at the headwaters on the water powers and what they mean to the states interested cannot be adequately treated here, but they must be considered briefly. Their prime purpose is in steadying river discharge to prevent abnormal flow, or at least minimize the occurrence and to furnish ample flow in the dry season. The five reservoirs established by the United States in Minnesota between the years of 1884 and 1895 have, during the period of their operation, been of inestimable value. They have cost a million and a quarter of dollars to build and maintain. They store ninety-six million cubic feet of water. From an estimate recently made the manufacturing of Minnesota is benefited to the extent of $13,000 for each billion cubic feet of water so stored. The influence, therefore, of those existing and of the balance of the original number projected, forty-one, which ought to be made operative, is tremendous, and affects the whole question of water powers on the Mississippi proper.

The Mississippi River above St. Paul, as shown, is exceedingly well adapted to water-power purposes. The banks are generally high, making flowage rights comparatively inexpensive; the bed is generally firm, making foundations comparatively easy; the slope of the river is exceptionally steep, making mill sites numerous; the total fall from Grand Rapids to St. Paul is about 578 feet, and a reservoir system at the headwaters of the river greatly increases its low-water flow.

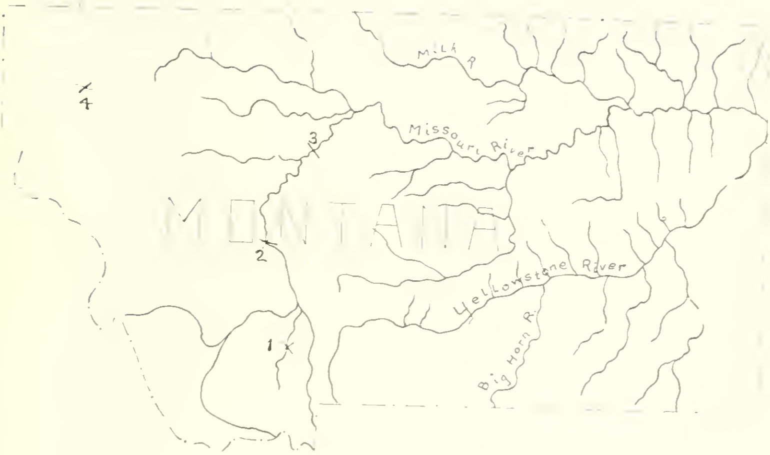
At Minneapolis the river has a utilized head and fall of sixty-eight feet, which is divided into two parts. At the upper falls are located all the flouring mills and other industrial establishments; at the lower falls is the electric plant. The utilized power, in 1906, at St. Anthony Falls was 40,000 horse-power, while plans under consideration will increase this from three nearby sources by several thousand horse-power. At Keokuk, Iowa, plans are under way, by the Hamilton Power Company, to develop an immense power plant which will create 200,000 horse-power. Few available sites exist below this point, on the Mississippi proper, but numerous and valuable water powers exist on the two great branches tributary to the Mississippi, on the Missouri and the Ohio and its branches.

Power on the Missouri and Tributaries

Difficulty in getting accurate and complete data for the Missouri exists, because few of the states adjacent to its course have done anything along this line. However, much valuable information is at hand from the State of Montana which shows what the Missouri may furnish in the future.

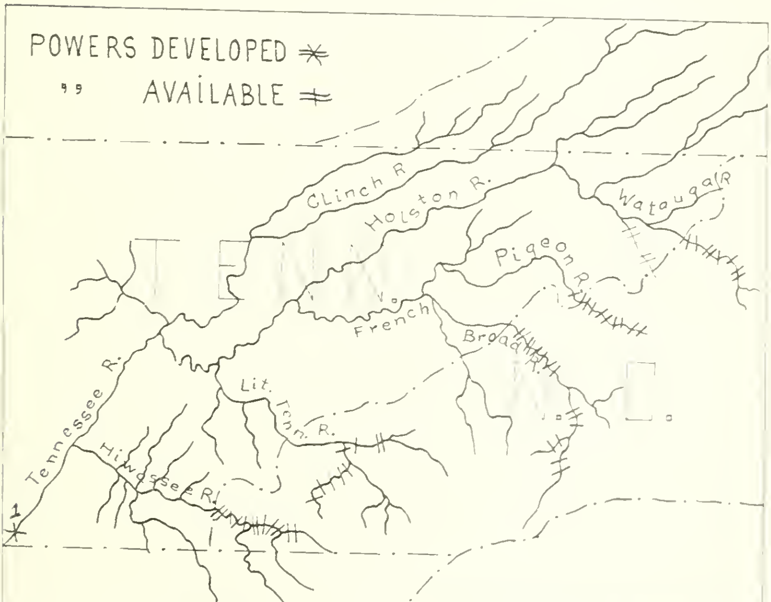
In 1898 the Madison River Power Company began the construction of a plant which was completed in 1902. It is located on the Madison River Canyon, near Red Bluff, sixty-five miles from Butte, to which latter place the current is brought for commercial use. The transmission is by aluminum wire with from 40,000 to 80,000 volts. The cost was approximately $300,000.

The Big Hole Electric Power Company is located on the Big



1. Red Bluff.
2. Canyon Ferry.

3. Great Falls.
4. Kalispell.



1. Chattanooga.

Hole River, twenty-seven miles from Butte, on the Oregon Short Line Railway. The dam is fifty feet high and about 500 feet long on the crest. Four thousand horse-power is developed and sent to Butte across country at 15,000 volts. This plant was started in 1897 and completed in 1900, the cost being estimated at $800,000. In the northwestern end of the State of Montana another successful power company is in operation. Near Kalispell, on the Big Fork River, is the plant of the Big Fork Electric Power Company. Here the fall from the surface of the water in the receiving basin to the base of the wheel pit is 109 feet. A capacity of 1,350 horse-power is developed, the plant having cost $150,000. The demand for the power from this plant has been such as to compel the company to take steps to increase its output.

The Missouri River Power Company has its present power house located on the Missouri River about twenty miles almost directly east of Helena, at the little town of Canyon Ferry. At the mouth of the canyon a dam 480 feet in length has been thrown across the stream, designed to give a thirty-foot head of water. One of the peculiarities of this special body of water is, that though the water may freeze in a lake a short distance back from the canyon, the water flows to the power house as free from ice in winter as in summer. Here is developed 10,000 horse-power, all of which is consumed, and the demand is greatly in excess of the supply. Helena, twenty miles away and East Helena fourteen miles away, receive their supply from this point, and recently power has been transmitted to Butte, sixty-five miles away. This plant is distinctive in that it transmits power successfully at the high pressure of 50,000 volts.

Last year Congress granted to another company, the Missouri River Improvement Company, the right to build a dam below the Great Falls of the Missouri, and about fourteen miles down the river from the City of Great Falls. What power will be developed here is yet a matter of conjecture, but it bids fair to eclipse the largest yet developed in Montana. Little information exists as to present available sites, but a glance at the region will indicate that the resources have just been touched. At Sioux Falls and other points along the Missouri and its tributaries various projects have been broached. As we come down out of the foothills the even trend of the prairie precludes water-power in the lower reaches of the river.

The Ohio and Tributaries

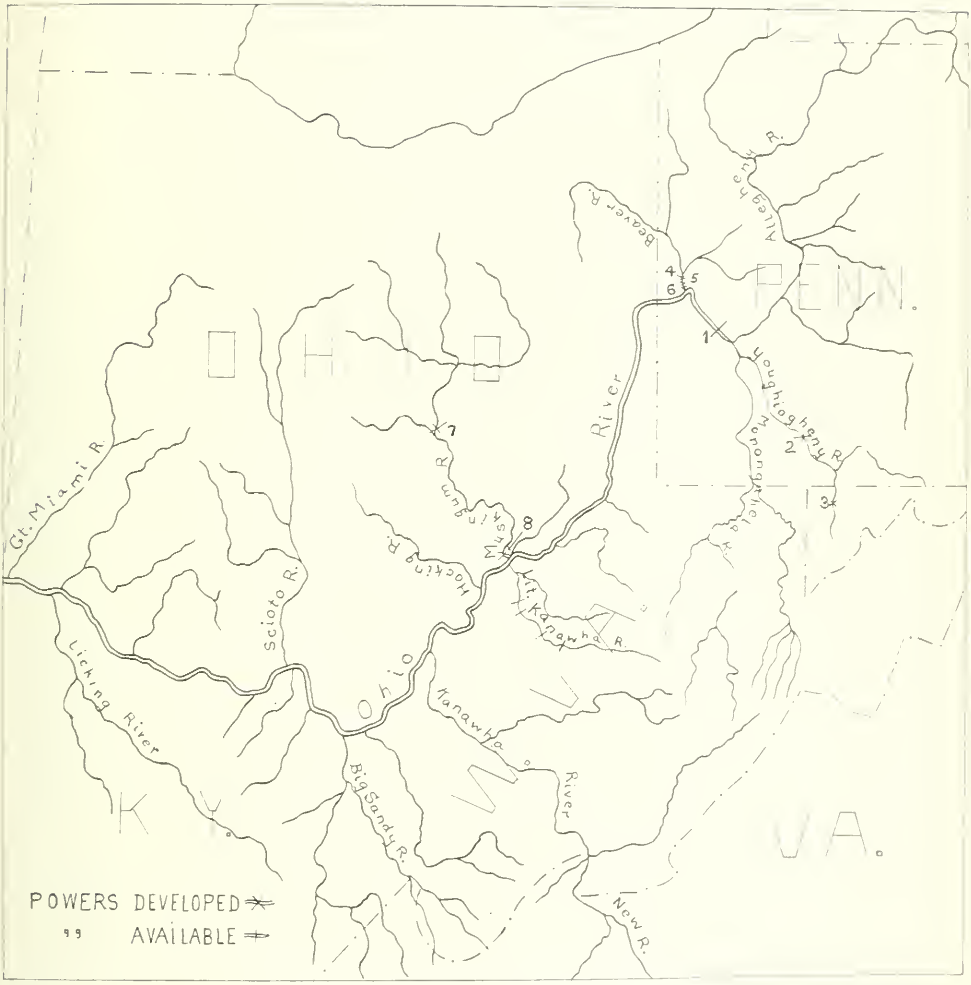
By the union of the Monongahela and Allegheny rivers at Pittsburg the Ohio River is formed, with a drainage area above that point between 18,000 and 19,000 square miles. Its drainage basin totals 214,000 square miles.

The principal streams contributing to this area are: on the north side, the Beaver, Muskingum, Scioto, Great Miami and Wabash rivers, and on the south, the Little Kanawha, Great Kanawha, Big Sandy, Licking, Kentucky, Green, Cumberland and Tennessee. These streams give to the Ohio system a vast range of territory and make it tributary to the larger part of the western Appalachians, all the way from New York down into Georgia and Alabama.

Mr. Dwight Porter states in the seventeenth volume of the census report of 1880 that there is "no question that, in their upper courses, above the limits of navigation, the various tributaries on the south side of the Ohio and their own affluents, present in the aggregate much available water-power. Those to the north of the Ohio are already largely in use, and will admit of much further development." It was originally thought that the powers in this region were individually of no great magnitude and suited, therefore, only to small manufacturing, but when we see 50,000 to 60,000 horse-power plants going up on the stream hitherto regarded as of little consequence we are compelled to revise authorities of twenty years' standing.

One of the chief disadvantages to-day to the fuller utilization of the streams, especially on the north side of the Ohio, is the insufficient supply of water in summer and fall, and the heavy freshets; by engineering skill these objections are being met, and the policy of afforestation will also aid The principal use of power on these rivers to date has been for flouring, grist and saw mills, but on certain rivers, notably the Great Miami and the Beaver, general manufacturing has established itself.

The Ohio River *per se* presents few opportunities for the development of water-power, the two really available sites being at Louisville and Davis Island Dam. Engineers estimate that from 17,000 to 144,000 horse-power can be produced at Louisville Falls, 600 miles below Pittsburg and 135 miles below Cincinnati. As early as 1873 plans to this end were presented utilizing



1. Davis Island Dam.
2. Connellsville.
3. Falls City
4. Beaver Falls.
5. New Brighton.
6. Fallston.
7. Zanesville.
8. Marietta.

the present government dam and canal. On the Indiana bank of the river a low wing dam of rip-rap diverts enough water to run a few small plants situated above on the bluffs, and a trifling use of power is reported also on the Kentucky side. Many objections have been raised, but the main project is entirely possible if sufficient capital would develop the site.

At Davis Island Dam, a few miles below Pittsburg, it is suggested that from 3,000 to 4,000 horse-power could be developed on an average of from seven to eight months a year, by taking advantage of the ten-foot fall below the dam as now constructed. The two outer branches of the Ohio, viz., the Allegheny and Monongahela-Youghiogheny furnish, comparatively, little power. On the Allegheny there are a few powers, ranging from 75 to 250 horse-power and one of 570 horse-power. With the improvements now being made in the generation of hydro-electric power, however, these conditions may be improved. The Monongahela is essentially a navigable river all the time, the aim of the coal companies being to get their barges down to Pittsburg, thence on to the West and South. There are a few powers, none in excess of seventy horse-power, however.

Water powers are utilized to a greater extent on the Youghiogheny River, there being two points at which use is made of electric power.

Connellsville, in the center of the great coke region of Pennsylvania, develops from 70 to 170 horse-power; while fifty-six miles from the source, at Falls City, where a thirty-four foot fall is found, from 350 to 900 horse-power is used. On the Beaver River, at Beaver Falls, there is developed, under a head of nineteen feet, from 650 to 1,510 horse-power. At New Brighton and Fallston, on the same river, from 600 to 1,400 theoretical horse-power is produced.

The Muskingum River, taking in the greater part of eastern Ohio, has eleven state dams constructed from which power is leased for thirty years at a time for so much per cubic foot per second per annum. On this stream the two more important points are Zanesville, 966 horse-power, and Marietta, where 900 horse-power is developed. The Little Kanawha furnishes small sites developing from 12 to 215 horse-power with an average of 35 horse-power. On the Great Miami water powers have been utilized for years, the estimated power now being developed in the valley is placed at from 8,000 to 9,000 horse-power.

The Upper Tennessee

To the south the Tennessee River furnishes tremendous possibilities. Rising in the foothills of the Blue Ridge Mountains and cutting through the Appalachian system by many tributary streams, the story of the Tennessee is the account of its tributaries to a large extent. Above the Tennessee line the drainage basin is about 1,831 square miles. From Georgia into North Carolina the stream is rather sluggish, but from beyond Franklin, North Carolina, it goes through rocky gorges with a descent of from ten to forty feet to the mile. A few water powers are in use here, but the possibilities are enormous. One of the principal tributaries of the Tennessee, the French Broad River with its many affluents, furnishes admirable sites in its passage through the Smoky Mountains and the smaller ranges to the westward.

Through the upper counties, near its origin in North Carolina, the river passes through a deep narrow gorge, from which power developed could be carried back into a rather rich country. Below this section are numerous falls where, according to the report of the state geologist, "water powers of great magnitude" can be developed. Lack of data as to flow of the stream prevents expressing this condition in figures of measurable value.

The Watanga River, another tributary to the Tennessee, is described as being everywhere a rapid one, for the most part running through a deep narrow gorge with rock bottom and rock sides, thus furnishing at many points excellent facilities for the construction of dams. The fall of the stream from the Tennessee line, a distance of some nineteen miles, is 900 feet, the average fall per mile being about forty-seven feet, hence the matter of utilization becomes merely a matter of convenience.

All told, there are about ten available first-class water-power sites on the thirty miles of the stream. At the mouth of Beech Creek, about four miles above the state line, there is an especially fine site where, from the report of the geological survey for North Carolina, it is said almost any desired power can be generated. Thousands of horse-power are unutilized on the comparatively small reach of this powerful stream.

The Toe River furnishes another admirable source of power. This stream, some forty-five miles in length, offers nine available water-power sites, and a projected and partially completed railroad follows the river sufficiently near to make the latent water powers accessible. Gaugings taken show that the flow is of such a nature as to develop from sixty-six to ninety horse-power per foot of fall throughout the region where the available sites exist. The South Toe furnishes seven available sites, one of which has a fall of 3.5 feet in 100 feet, over a ledge of coarse granite, at which point the stream is fifty feet wide and where ample space exists for buildings. Another branch, the Caney River, gives eight sites for power usage, and the character of the stream, flowing through a deep narrow rock-bound gorge, makes dam building easy.

The Pigeon River, some fifty-five miles in extent, joining finally with the French Broad, through the major part of its course has a fall of twenty-six feet to the mile. It furnishes four excellent sites and the surrounding country is such that by transmission it would furnish power to towns on the Western North Carolina Railroad, and to one or two other larger towns, notably Waynesville. Numerous other powers are found on the Hiwassee, where thirteen are available; the Cheowah with seven; the Tuckaseegee with seventeen; the Little Tennessee with nine, and the New River with fifteen.

One of the most remarkable evidences of the growth of hydro-electric development is to be found in the recent project for the building of a plant at Chattanooga, Tennessee, which will develop 52,000 horse-power.

All through this region evidences of the increased use of this resource is to be seen. The Cumberland River in the upper reaches above Nashville furnishes several ample sites for power which, if developed, would, by transmission to Nashville and other river points, aid in swelling the $10,000,000 worth of trade which is annually carried on this stream.

Enough has been detailed to demonstrate the mighty force now unused in the great valley of the Mississippi. The maps show that the powers are concentrated in four general centers, each of which has its significance. In the Missouri or Montana district the power to-day is being used to light cities, operate urban railway lines, run copper smelters, for local manufacturing and for mining. As a factor in city life and growth it is of the greatest importance. Comparatively cheap power will furnish a stimulus to the production and manufacture of the minerals mined, give cheaper and more frequent transportation facilities, allow of the growth of cities and provide a basis for new communities.

Capitalized at $16.00 per horse-power per annum it is conservatively estimated that from $64,000,000 to $70,000,000 worth of hydro-electric power is annually going to waste in the Mississippi system.

The rise of Minneapolis as a milling center has been largely due to her natural site where she enjoys an unusual power advantage. The present total valuation of water-power developments in operation on the Mississippi River between Minneapolis and the reservoirs, including mills, factories, electric-light plants and other industrial establishments depending upon water-power can safely be estimated at $2,250,000. There are now building and in process of construction water-power developments above Minneapolis to the value of $1,000,000. Five large power plants are under consideration at the estimated value of nearly $3,000,000.

In the region of the twin cities of Minneapolis and St. Paul the annual value of flour out-put from mills using water-power is $58,300,000, feed $6,700,000, woolen goods manufacture $500,000, electric light and power $800,000, with sundry other products totaling some $67,000,000. The aggregate value of flour mills, factories, woolen mills, elevators, shops, etc., reaches the neighborhood of $18,000,000, with the approximate annual pay-roll of $3,500,000.

The increased use of our natural resources in this section will mean our greater ability to compete with the foreign flouring and milling industries, enable us to develop to a greater extent our agricultural regions, to increase our manufactured products and enable a larger population to live in the region tributary to the upper Mississippi.

As copper and general mining will be benefited in the northwest, flour and general manufactures in the Minneapolis region, so coal, pottery, iron and steel, cutlery and general manufactures would be benefited in the Ohio River region. It is claimed that much of the manufacturing supremacy of eastern Ohio has been due to her cheap water-power. In the southeastern part of the system on the west-Appalachian region there is immense possibility, but as yet there has been little development.

Chattanooga, Tennessee, has a bright prospect with the development of the proposed 52,000 horse-power dam—this is going to mean much to the agricultural implement business and cotton manufacturing throughout the South. The lumber and cotton industries will have a tremendous impetus given them, while better lighted cities and better transportation facilities will give a new horizon to the people. Cheap power, and long-distance transmission with its increased output under more desirable conditions than at present, concentration of production, better civic conditions, in what are now practically isolated rural communities will come as the consequence of our fuller appreciation of this valuable but inadequately utilized resource.

THE IMPROVEMENT OF THE MISSOURI RIVER AND ITS USEFULNESS AS A TRAFFIC ROUTE

By Lawrence M. Jones,
President Missouri Valley River Improvement Association, Kansas City, Mo.

By all fair reasoning the Missouri is the greatest river on the American continent. From the three forks of the Missouri northwest of Yellowstone Park to its mouth, as the stream meanders, is a distance of 2,547 miles, and to the Gulf of Mexico, the Missouri-Mississippi has a length of 3,823 miles. The Missouri is longer than the entire Mississippi, and more than twice as long as that part of the Mississippi above their confluence. The Missouri drains a watershed of 580,000 square miles, or one-sixth of the land surface of the United States, and its mean total annual discharge is estimated to be twenty cubic miles, or at a rate of 94,000 cubic feet per second, which is more than twice the water discharged by the upper Mississippi. The Missouri is by far the bolder, the more rapid and more turbulent of the two streams.

It is the most feasible waterway project in the United States to-day. The results to be realized by its improvement are more far-reaching for the amount of money to be expended than can be secured from any other project. The Missouri has the greatest navigable length of any river in the United States; it has a greater and more continuous volume of water than any other river in the United States; it has more and better stretches of "good river" than any other. It is the only interior river having water enough of its own to sustain a minimum channel of twelve feet.

With a twelve-foot channel the Missouri would have a freight-carrying capacity equal to 600 single-track railroads, and yet the improvement would cost less than to build one single-track railroad from Kansas City to St. Louis. A competent authority has calculated that with a twelve-foot channel, the Missouri would save the West every year an amount that would more than equal the entire cost of improvement from its mouth to Kansas City. Its improvement as planned would solve two great problems for the West: high and unfair rates and inability of the railroads to handle the traffic on the present tracks. The greatest problem in railroad transportation to-day, aside from that of exorbitant and unequal freight rates, is to secure tracks upon which to move cars. New tracks to relieve the congestion cannot be built. There is neither money, material, nor men for the work. When we realize this, then we can see the urgent necessity for improving the great natural highways of commerce flowing past our doors.

The History of Steamboating on the Missouri

When the steamboat and the prairie schooner were the only means of transportation to the promised land of the great West; when the gold hunter, the trapper and the adventurer were the pioneers of civilization, hundreds of boats plied the waters of the Missouri, going as far north as Fort Benton, twenty-five hundred miles from St. Louis. Fortunes were made by a boat in a single trip. Steamboating reached the summit of its prosperity about the time of the breaking out of the Civil War. More than 700 boats navigated the Missouri in those days, and more than 200 now lie buried in the sands between Kansas City and St. Louis—silent reminders of the glory of other days.

The first steamboat—the Independence—ascended the Missouri River as far as the mouth of the Chariton River in the spring of 1819. However, there were few steamboats on the river previous to 1840, owing to the limited demands of commerce. For many years the navigation of the Missouri River was confined to primitive wooden craft, and its commerce was restricted to the fur trade; but as soon as it was known that the Missouri was such a navigable river, and that it flowed through such a rich agricultural region, the navigation on the river increased until the year 1858, when it reached its maximum.

In 1858 packet lines were established from the mouth of the Missouri to Miami, Kansas City, St. Joseph, Omaha and even to Sioux City. Those lines carried United States mail and express freight. So numerous were the boats on the river during this period that it was no unusual sight to see five or six lying at the landing at the same time, and at no time was a boat out of sight during the boating season, which continued from March to November. The prosperity that this great traffic brought to the river towns was phenomenal and the population of many of them was larger fifty years ago than to-day. In 1857, fifty years ago, the wharfmaster at Kansas City reported more than 700 steamboats at the Kansas City Levee. The levee, then and for many years, was the busiest part of the business district, but the Civil War, following close upon this great prosperity of the Missouri River caused the loss of many of the boats and drove others from the river.

In 1862 gold was discovered in Montana, in consequence of which there was a great rush to that country. The Missouri River was the only means of transportation and of course this caused a wonderful revival of steamboating. This was of but short duration, but it proved to be exceedingly profitable, as the rates demanded and paid were exorbitant. The voyage to Fort Benton was 2,200 miles and this was beset with danger, both in the navigation and from the Indians. The usual rate charged on freight was from ten to fifteen cents per pound and a first-class passage to Fort Benton cost $300.00. The railroads which were then rapidly expanding and pushing into the new territory soon came into such competition with the steamboats that they forced them out of business, by carrying freight cheaper than the steamboats did. However, as commerce began to leave the river, railroad rates began to advance, until Kansas City business men felt the necessity of seeking relief by restoring river competition.

In February, 1890, a company was incorporated under the laws of the State of Missouri, with an authorized paid-up capital of $132,500. This company was known as the Kansas City and Missouri River Transportation Company. They built four wooden boats and operated them more or less regularly for four years. Much has been said about the failure of this packet line, but, as a matter of fact, it did more to regulate freight rates between the Mississippi and the Missouri than anything else that had been done before or since. It saved the shipper $100 for every $5.00 he had in it; it established the fact that water competition existed in Kansas City and the railroads had to meet it. The old packet line of 1890 was not a failure; it was a grand success, and Kansas City made millions of dollars out of it. The railroads started in deliberately to put this packet line out of business, and by rebates and other unfair methods succeeded in doing so. In fact, the whole fabric of rates went to pieces, and as the Kansas City and Missouri

River Transportation Company was not properly supported by the merchants, it was forced to quit business. From the time the Kansas City and Missouri River Transportation Company discontinued business until late in the summer of 1906, there were no efforts made to navigate the Missouri River.

The Missouri River Valley Improvement Association was formed July 30, 1906, at a meeting held in Kansas City, attended by representatives of the principal commercial bodies of Kansas City, Missouri, and Kansas City, Kansas. The records of the first year's work speaks for itelf. Its purposes were:

To prove the Missouri River navigable.

To have the river navigated by commercial freight carriers.

To secure from Congress appropriation for improvement of the channel in aid of navigation.

To establish and maintain a close working relationship with the National Rivers and Harbors Congress and other organizations promoting river improvement.

To conduct a campaign of education intended to inform the people of the Missouri Valley and trans-Missouri region, the officials in Washington and the Congress of the United States, of the magnificent possibilities and tremendous commercial importance of Missouri River improvement.

The doubt as to the navigability of the Missouri River by steamboats carrying sufficient freight to render operation profitable which existed when this association began its work, has been entirely removed. The impression seemed to have become general, even in commercial centers of the Missouri Valley, among the officials in Washington and with the members of the Rivers and Harbors Committee, that the Missouri River had passed its days of usefulness as a commercial highway. There is a different impression now.

There are signs of a great awakening of interest in the navigation of the Missouri River and why should there not be, when Kansas City is paying to-day as high freight rates as she did thirty years ago? There is no relief under the law, and the only redress from the grasp of this relentless power, is that furnished by this great highway of commerce, the Missouri River.

Re-establishment of Regular Navigation

One year ago Kansas City decided to begin navigating the Missouri. She did not bombard Congress for an appropriation for the river, but went to work to demonstrate that the thing was feasible. If it was not feasible, we did not want any money from the government; if it was feasible, we were satisfied that, when we had demonstrated that fact, the government would do its part, and we have not been disappointed in our calculations. We believed that, with the use of the river would come governmental co-operation and that we should first show our faith by our works before asking the government for any expenditure of money. We are firmly convinced that use and improvement should go hand in hand. Here was a great river flowing past our doors. Here was the solution of our transportation troubles. In this river dwelt the power that was to free the young metropolis and the great West. The river was the same river as when hundreds of craft plowed its waters. Why not use it now?

One year ago Kansas City procured boats for experimental trips from St. Louis to Kansas City. The experiments were successful. The boats made the trip from St. Louis to Kansas City loaded with freight, without ever turning a wheel backward, and this year regular freight and passenger service has been inaugurated. The successful experiments in navigating the Missouri in the summer and fall of 1906 and the promise of Kansas City to use the river more extensively than ever, enabled our member of Congress, Hon. E. C. Ellis, to get an ample appropriation of funds to start the snag boats to remove obstructions and to have shore lights placed. Two boats, the "General Suter" and the "James B. McPherson," are now industriously engaged in cleaning the channel of snags and other obstructions accumulated during years of governmental neglect. This appropriation was the first that has been made in aid of the navigation of the Missouri for several years. Thus the Missouri was restored "to the map" of navigable streams, entitled to federal aid. In addition to this appropriation, provision was made for a report by engineers, upon which report appropriations may be based for the improvement of the Missouri River in the future.

The next step taken was the organization of the Kansas City Transportation and Steamship Company, the purpose of which organization was to maintain regular steamboat service between Kansas City and St. Louis. This company put into operation, with the opening of navigation this spring, a line of boats which have made regular trips between Kansas City and St. Louis. The people are now awake to the great things in store for the West through the resumption of navigation on the Missouri. It promises to usher in an era of large development.

With imperfect equipment, we are able to carry freight between St. Louis and Kansas City at an average reduction of one-third from railroad rates. When we get our splendid non-sinkable steel boats, for which we are now letting contracts, we confidently believe we can carry freight for one-half the railroad rates and realize good returns on the investment. We have demonstrated in one year that we have a river, that we have the money to build boats, and that we have the freight for the boats to carry. The old Missouri is once more ready to fulfil its destiny as one of the great commercial highways of the West.

Advantages to Accrue from Improvement of the Missouri River

The best way to arouse sentiment in favor of an improvement is to show the benefits sure to accrue from it. For example, by using the proposed twelve-foot channel of the Missouri, the fourteen-foot waterway via the Illinois River and the Chicago Canal, the Great Lakes, and the twelve-foot Erie Canal, at the average freight rates of water routes as compared with rail, one congressional district of the State of Kansas would have received for its 1906 wheat crop over $5,000,000 more than at the prices paid.

It would not have been necessary that one bushel of this wheat should actually move to New York at this rate. The fact that it *could* would make the price for the entire crop, not only of the district but of the state and adjoining states. Wheat is sold on the world's markets, and the price of wheat in Kansas or Nebraska is practically that of Liverpool, less the cost of transportation. Reducing the rate raises the price, regardless of the ultimate disposition or destination of the product.

To bring the illustrations of the gains in this district a little closer home, it may be said that one county, Sumner, would have gained in 1906 $500,000, or a per capita of $20 for not only the families of the farmers, but for the residents of the cities and towns as well. Other counties of the same district would have gained per capita from $20 to $40.

It may be difficult to realize just what this would mean to the farmers' families, to the tradesmen of the towns, and to the jobbers and manufacturers of the cities of the whole trans-Mississippi wheat-growing region. It would mean even more because of the lower west-bound freight rates on the products sold to the enriched consumers, adding this large saving to his other big profits. There is to be considered also the enhanced price of other farm products as a result of reduced rates to their best markets. With this also would go a big advance in prices for farm lands, so that the farmer in Kansas to-day may find himself made rich by the improvement of the Missouri River.

The gain in the value of farm lands in the states of Nebraska, Kansas and Oklahoma, accruing from improvement of the Missouri, would pay the cost several times over. The benefits afforded would continue year after year, while the cost of maintenance, once the channel is permanently established, would be insignificant in comparison with either its first cost or its savings to shippers.

Kansas City might have saved several million dollars on its 1906 shipments with an improved channel in the Missouri. This would have been increased largely if the Missouri was used in connection with the Illinois and Erie Canals and the Great Lakes to make a direct waterway to New York, and by the improvement of the Mississippi, to afford a deep water route to the Gulf of Mexico.

The gain to Kansas City, Omaha, and other Missouri River cities would be still further augmented by the great increase of business—in manufacturing, jobbing and other lines—as a result of the low rates and the exceptional prosperity that must come to Nebraska, Kansas, Oklahoma and other Western States by the gain in price of their products.

These two examples—that of the Seventh Kansas Congressional district and that of Kansas City—have been selected from among many, all making the same general showing. What is true of the Kansas counties named is true, in greater or less degree, of the whole State and other Western States as well; and the same can be said of Kansas City and other commercial centers on the Missouri River.

If the producer cannot find means to transport his commodities to a market where they are needed, he is forced to cease or cut down production in his particular line. This means a curtailment of his power to purchase the products of others, which of course has a depressing effect on labor, brings about contraction in financial affairs and recession in business generally. Production is growing five times as fast as railroad mileage, and the railroads of this country are absolutely unable to catch up with the demands of transportation. This will necessitate our reducing our activities in production with the far-reaching effect this would have on labor and capital.

A car shortage would be unheard of if we made proper use of the inland waterways of our country. They would furnish a cheap and reliable means of transportation, not conflicting with the railroads, but assisting them in removing the greatest obstacle to commercial and industrial progress—insufficient transportation facilities. The Missouri River, improved according to the recommendations of governmental engineers, would have a freight-carrying capacity equal to that of 600 railways, fifty times the capacity of all the roads running between the Mississippi River and the lower Missouri and more than twenty-five times the capacity of all the railroads running from the Mississippi to the Missouri at all points.

The economy of operation of transportation lines on the improved Missouri would be such that boats could make large profits in carrying freight at greatly reduced rates between the rivers. Owing to the bend in the Missouri at Kansas City, that city is practically the point farthest west for inland navigation. Accordingly, when the improvement of the Missouri is completed to Kansas City, 390 miles, freight rates will be affected to the entire trans-Missouri Valley.

This territory that pays the same freight rate as Kansas City on traffic moving between the Mississippi and the Missouri constitutes one-fourth of the area of the United States, exclusive of Alaska. One-eighth of the population of the United States lives within its borders. Removed from markets, the people naturally have to pay high freight rates on all they produce and consume. No other section is more in need of or more entitled to the relief that can be furnished only by the improvement of the Missouri River.

These people have no other river project. The rates east of the Mississippi have never been as exorbitant as west. First class, from Chicago to the Mississippi, the rate is 20 cents; Mississippi to Kansas City is 60 cents. At one time the published tariffs from the Mississippi River to Kansas City were on a basis of 30 cents, first class.

The Missouri River constitutes 5 per cent of the entire navigable inland waterways of the United States, including the Great Lakes. It has 14 per cent of the navigable waterway of the region drained by the Mississippi. Its navigable length is greater than the distance by rail from St. Louis to San Francisco. It has a navigable bed above Sioux City of 1,475 miles, or 500 miles more than the entire length of the Ohio. It is the one interior river, except the lower Mississippi, which it feeds, that has a water supply sufficient to make every city along its course for 800 miles a seaport. The territory affected paid, in 1905, 15 per cent of the freight revenue of the United States, or $220,000,000, of which a large part would have been saved to producers and consumers if the Missouri River had been improved.

Cost of Improvement

The cost of improving the Missouri River, from its mouth to Kansas City would be less than that of paralleling the Wabash Railroad, the short line between Kansas City and St. Louis. Government engineers estimate the Missouri River can be given a permanent twelve-foot channel from its mouth to Sioux City at a cost of $40,000,000. The Lakes-to-the-Gulf deep waterway project calls for a fourteen-foot channel, and this minimum depth could easily be obtained in the Missouri below Kansas City with small additional cost. The engineers' estimate of the cost of the work is for $20,000,000 below and $20,000,000 above Kansas City.

The Missouri River is destined to form an important part in the comprehensive system of deep waterways building in the United States. The Erie Canal is being deepened from seven to twelve feet at a cost of $101,000,000 appropriated by the legislature of New York. The Chicago Drainage and Ship Canal has been extended to the valley of the Illinois River, the canalization of which stream would give a fourteen-foot channel from the Great Lakes to the Mississippi. These two waterways, in connection with the

Great Lakes, would open up a water route from the Missouri to New York.

The amount asked for the Missouri is not large in comparison with the cost of improving other streams. The Ohio River, on which many millions have been spent, must have $61,000,000 more to give it a nine-foot channel. The Mississippi needs more money than the Ohio, so that the Missouri is making a modest demand. Draining the granary of the country, with a vast tributary region paying high rates to the railroads, and demanding the relief river navigation would afford, the right of the Missouri cannot be ignored.

Plans of Missouri River Improvement

Two plans for the continuous, systematic improvement of the Missouri River have had official approval—that favored by the Missouri River Commission and that under which work was carried on in the early 90's. The report of the Missouri River commission says:

> In order to obtain a depth of twelve feet at low water, wide enough for navigation, a result that can be regarded as perfectly practicable, suppose it were necessary to spend as much as $50,000 per mile, which recent experiments almost conclusively show to be a liberal estimate, the cost of obtaining this channel, up as far as Kansas City, would be less than $20,000,000. An amount, as before shown, saved to the producers of the valley in one year.
>
> To carry this same improvement to Sioux City would cost only about $40,000,000—saved to the producers in two years.
>
> To improve the river, even between Kansas City and St. Louis, to a low water depth of twelve feet is deemed perfectly practicable, and at a cost per mile of $50,000, not exceeding that of a first-class railroad.

This would give us a highway free to all having a carrying capacity of 600 single track railroads.

Congress made appropriations in 1892 for the systematic improvement of the Missouri River in aid of navigation, but the plan provided for a depth of six instead of twelve feet. Appropriations for this work were discontinued after 1896, and not renewed.

Appropriations for Waterways an Investment, Not an Expense.

It is estimated that the internal trade of the United States aggregates more than twenty-five billions of dollars annually. Appropriations of fifty millions annually for waterways would be but a fraction of one per cent of this great business. As commerce bears the great bulk of the expenses of the government, it seems but fair that a liberal part of governmental appropriations should be directed toward the upbuilding of commerce. In the race for commercial supremacy, we must of necessity equip ourselves with all the facilities necessary to hold our place in the commercial world. If, by the expenditure of fifty millions annually on our waterways, we could save our citizens hundreds of millions in transportation charges, to say nothing of the great impulse it would give to all our industries, it would not be a waste of money, it would not be an expense, but a magnificent *investment.*

There is a close relation between the improvement of our rivers and the building of the Panama Canal. If the United States is to realize what it should from this great undertaking, it is absolutely necessary to improve the waterways of this country. If we do not do so, we are practically building that great canal for the use of foreign nations. The improvement of our internal waterways will enable us to compete with foreign nations for the trade of that great country south of us, where we make such a poor showing to-day. With improved waterways and the Panama Canal, we are in touch with the rich trade of the Orient, the prize of commerce for thousands of years. The last fifty years have been the most wonderful in achievement in the history of the world. Those fifty years cover the life of Kansas City and the great West. The achievement of those brief years is but an earnest of what may be accomplished in the future. The West asks that it may be allowed to use the great resources with which it has been endowed by nature.

COLUMBIA RIVER IMPROVEMENT AND THE PACIFIC NORTHWEST.

By Frederic G. Young,
Secretary of Oregon Historical Society and Professor of Economics and Sociology, University of Oregon, Eugene, Ore.

A system of transportation, adjusted to the needs of the Pacific Northwest, can hardly be a counterpart of those developed for the older sections of the country on the opposite and less-folded side of the continent. The specific conclusions with regard to the supplementary functions and to other relations of the rail and the water routes found true throughout the East will probably need modification before being applied here. At any rate, the conditions in the Pacific Northwest that have to be taken into account for determining the features of the most economical and efficient system of transportation for this region are so striking and unique as to warrant a brief reference to them.

The highways over which the productions of the Pacific Northwest must be carried to reach the consumer lie on the Pacific in one direction, and stretch across the backbone of the continent in another. These opposite destinations for fairly equal proportions of its grain, lumber, fish, livestock, wool and fruit affect the features of the transportation system adapted to its needs and differentiate this system from that of the Middle West, whose products almost exclusively find their market in the direction of the Atlantic seaboard.

Again, the striking contrasts between the lay of the land in the Columbia basin and that of the basin of the Mississippi must, in the nature of things, exhibit themselves in contrasting systems of transportation when these have become fully adapted to their respective conditions. On the imperceptibly sloping, almost unbroken and but gently undulating, plains of the Mississippi and the Missouri the problem of providing economic means for carrying the commodities of commerce is quite different from that presented by a region largely composed of table lands, here and there furrowed by deep valleys with precipitous slopes, and bordered by high ranges of mountains stretched directly across the path of the routes leading out to the markets of the world.

The lines of least resistance for traffic are more pronounced in the Columbia basin than in any portion of the East. The uniform meshes of the railway net-work of the Mississippi Valley will hardly be realized here and for other reasons than a lack of uniform productivity throughout all portions of this basin. The longer way around will, in this region, more frequently be found the more economic route to the market. Until release is found from the pull of gravity so that the lifts and drops in passing over intervening ridges do not involve heavy costs, the main lines of railway here will thread the main valleys. This means that even in the matter of distance the water routes for heavy traffic will be at but slight disadvantage here as compared with the rail; add to this the fact that the Columbia "seeks the ocean on a line parallel with the trade channels and not at right angles to them," as is the case with the Mississippi in relation to the major portion of the volume of trade of its valley; and the further facts that have repeated endorsement of the engineers of the national government, that the banks of the Columbia "are more stable, its waters more clear, its ice blockades are much less in duration than on the great waterway in the East," and we have something of a basis for the presumption that transportation on inland waterways in the Pacific Northwest is destined permanently to assume a comparatively larger importance than in any other section of the country, and that the improvement of these waterways so as to realize their largest utility is a matter of more vital interest to its people than to those of any other section. In all this we have grounds for a tentative hypothesis at least that the ensemble of conditions in the Pacific Northwest are unusually favorable for reliance upon waterways as routes for heavier traffic and unusually obstructive to the development of a net-work of air-line rail routes with easy gradients.

Before developing this hypothesis, through reference to the experience of the Pacific Northwest, while securing so much of a system as it has, attention should be called to one other aspect of the situation here. The Pacific Northwest is conspicuously a gateway for the commerce between the main body of the American people in the eastern portions of the country and the Orient.

Three factors conspire to bring this about. It is on the line of the great-circle route to the East, it has the only sea-level passageway through the Cascade-Sierra barrier on the western edge of the continent, and it possesses the matchless harbors of Puget Sound. The transcontinental lines penetrating to this region were located, built, and have ever since been operated, with their gateway interests dominant. Even to-day the greater construction activities and expenditures for the Hill and the Harriman roads—a Hill road paralleling the Harriman line down the Columbia to Portland, and a Harriman road paralleling the Hill line from Portland to Seattle—show that the interests of the producer of this region are neglected and even sacrificed in the rivalry for the gateway traffic. The local producer has received some consideration at times from these transcontinental railway magnates. A meager provision of "feeders" exists. Some have built more than others, but with all and always competition in the transcontinental service has been the main concern.

As a matter of fact no independent lines for the service of the producer of the Pacific Northwest exist. While the Oregon Railway and Navigation lines and, in a less degree, the Oregon and California line, were originally planned for local service they soon, through lease and purchase, became mere links in transcontinental systems. There is thus in a large sense no system of rail transportation for the Pacific Northwest. As it is, the people of this section get the crumbs of service and have laid on their shoulders through high charges the great burden of the support of the systems as carriers of transcontinental traffic.

This situation would make the plight of the producer of the Pacific Northwest extreme were it not for his advantages in the wonderful natural resources at his command. Suppose the haul across the Rockies is a natural one for part of even his bulky grain and lumber. Yet the carrying capacity of these roads is so helplessly over-taxed that they are under the necessity of rejecting consignments, indirectly by exorbitant charges and directly by refusing to furnish cars, as is witnessed at the present time in the embargo on the lumber export business to the Middle West. Increased equipment and double-tracking are out of the question under existing financial conditions. Should the managing agencies of these railway systems redeem themselves in the eyes of the people and win confidence so that with funds at their command they could bring the carrying powers of their roads up to the demands made upon them, still the producer of this region would still be at the mercy of those who have pretty consistently ignored him except as he might obtain relief through the mediation of the Interstate Commerce Commission or, more effectively, through independent means for getting his productions down to the sea.

The release of the producing energies of this region from the vise-like grip in which they are held by the systems of rail transportation as at present developed would be fully achieved if a system of inland waterways for traffic needs could be made available. On these the annual output of products could, free from the taxing power of monopolies, be floated down to the ocean-shipping ports. The rates of carriage on such waterways would regulate not only the charges on the rail routes parallel to them but also the rates on the transcontinental carriage to the East. There is no question as to the need of them here. In no other section are present transportation facilities so inadequate to existing demands. Car famines recur regularly and in most aggravated forms. No other section is taxed so heavily for what service it gets. Nowhere else is potential development being retarded to the same degree.

The problem of progress for this section narrows down to about this: Is it feasible to utilize fully through improvement the Columbia and its tributary waterways to relieve this congestion of traffic and so cheapen transportation costs as to stimulate vastly the development of this section? Before turning to an examination of the availability of the Columbian waterways, just one observation on the results of further delay in undertaking a scientific adjustment of these transportation facilities seems advisable. The present condition of perplexingly inadequate facilities, and monopoly charges prohibitive of further development, naturally raises an unreasoning clamor for duplications in hopes of lower rates through competition. This betrays a state of intelligence that is unmindful of the fact that the cost and maintenance of great railway structures, that serve only to divide traffic with a road already existing, mean fastening upon its supporters a load almost the double of what would have been necessary had the service of the existing line been co-ordinated with that of an available waterway. Fortunately, however, the measure of undeveloped resources here protects this region, too, from such permanent incubuses much as eastern sections through their development escaped evils of excessive duplications. Surely a clearer conception on the part of the people at large of what is involved in a scientifically adjusted transportation system would have forestalled the possibility of such a transaction as Mr. Harriman's in diverting the thirteen millions from the surplus accumulated through extortionate charges upon the producers in the Oregon Railway and Navigation territory, towards the securing of terminals in Tacoma and Seattle for his line paralleling the road from Portland to Seattle. And certain it is that the people of the Pacific Northwest if they fail to make a careful inquiry into the problem of supplying themselves with an adequate and an economic system of transportation will burden themselves and their posterity with ill-adapted railway duplications and will continue to serve as pawns for the railway magnates in their game for the prizes of transcontinental traffic.

In the general survey of the situation in the Pacific Northwest it was noticed that the lay of the land and the characteristics of the waterways of this region indicated large utilization of them for purposes of commerce. The safest and probably the quickest way to determine what part and how large a part these waterways are adapted to have in a fully adjusted system of transportation for this region is to trace the development of man's experience in using them and the growth of his plans and achievements in improving them. Barring a few formidable obstructions, the major portion of which have already been obviated and all of which are at a reasonable expense susceptible of being permanently obviated, the Columbia River throughout its course approximates more nearly the character of a ship-canal than probably any other river in the world. The Canadian Pacific has run boats on regular schedules on its uppermost stretch, penetrating even to its source, some sixteen hundred miles from its mouth. Much as Henry Hudson on his voyage of discovery sailed up the river that took his name to where Albany now stands, so Lieutenant Broughton, of Vancouver's expedition, profiting through introduction of Captain Gray, pushed the limits of discovery with his vessel to a point near the Cascade Mountains, one hundred miles up stream.

Though the initial cost of obtaining an "open river" throughout the main stream and the important tributaries will be considerable the permanency of such improvements and the smallness of the sums necessary for maintenance more than compensate. Such is the general firmness of its banks (not a little of its course is run between walls of basalt), such is the comparative freedom from the silt that causes erosion and shifting bars, and so short are the periods when it is locked by ice, that its adaptability as a waterway for purposes of commerce may be rated very high.

It was the judgment of John Jacob Astor, or his representative, in establishing Fort Astor, in 1811, near the mouth of the Columbia, that the emporium should be there for commerce with the Orient. A little more than a decade later that judgment was dissented from by the sagacious McLoughlin of the Hudson Bay Company. He moved the entrepôt of trade a hundred miles up the river. His idea, in so far as it affects the use of this lower stretch as an arm of the sea, seems destined to stand. It has not merely the sanction implied in the building up of a city of 200,000 people at the head of navigation on the lower Willamette, twelve miles up from its junction with the Columbia, but also a hearty seconding in the plans and projects of the engineering service directing river and harbor improvements. The consideration that weighed with Dr. McLoughlin in establishing Fort Vancouver near the region whence was obtained his company's wealth of commerce holds good to-day. The ocean liner is brought for its cargo as near as possible to the heart of a large and rich producing country. The improvement, therefore, of the Willamette and Columbia below Portland is virtually of the nature of harbor improvement while that contemplated for the river above and its tributaries is that of inland waterway improvement.

That the waterways of the Columbia basin had eminent natural fitness as avenues of commerce and travel is conclusively proven in the flourishing economic development of this region in the pre-railway era. Up to about 1880, the Columbia River with its tributaries constituted the only trunk lines of inland commerce and travel in the Pacific Northwest. The facilities of transportation afforded by these waterways had sufficed for the upbuilding of a very prosperous community. Some three hundred thousand people were in the valley of the Willamette and along the lower and upper Columbia. Evidences of a high degree of comfort, of large accumulations and of the great volume of commercial activity elicited remarks of astonishment from visitors to this isolated region that was then still practically without railroads. It is safe to say that no other river system since the era of general railway development served so fully the needs of transportation facilities as did this one of the Pacific Northwest.

But the inland waterways of the Pacific Northwest were like those of the other sections of the country destined to be relegated to a position secondary to that of the railways. Only the one-hundred-and-ten-mile stretch from Portland to the sea suffered no eclipse through being paralleled by a railroad. This section of river channel is, however, in its relation to navigation, to be regarded as an arm of the sea, or harbor passageway, rather than as an inland waterway. The general supersession of the waterway for the railway might seem to be significant of the greater all-around utility of the railway in this section, for it appeared to displace the well-established steamboat completely on certain routes and, for aught that appears on the surface, finally. But it is to be noted that the introduction of the railway into this section was not primarily to furnish facilities of a higher order than those of the existing waterways. They were built here not so much to supersede the unsatisfactory steamboat as they were to earn munificent grants of public domain and to supply the final links in the transcontinental lines giving connection with the East. For passenger and higher class freight service the railroad, here as elsewhere, had, of course, the advantage from the start. The railways along the Willamette and the Columbia won out so decisively, however, from quite extraneous reasons. The falls and formidable rapids in these rivers that made necessary short side canals or portage railways furnish the secret of this easy conquest on the part of the railways. These portage improvements were owned either by private corporations or by the railroads themselves. At the falls of the Willamette, fifteen miles above Portland, a private canal company with its tolls taxed the river traffic nearly out of existence. On the Columbia the owners of the portage railways were also the owners of the railroad paralleling the river. Naturally it was their interest and, from their position of vantage, within their power to block completely the movement of traffic on the river.

Water transportation was not, however, to lapse into a mere tradition in the Columbia basin because of the untoward influence of private monopoly at these portage gateways. Considerable areas of rich and rapidly developing country on the north bank of the Columbia had as yet no railway and kept several lines of boats busy. Another section of country far up the Snake, but magnificently endowed with resources, was not for a long time reached by a railway. It, too, had to rely on a navigable section of that largest tributary of the Columbia for connection with the outside world. The mere idea, too, of a great Columbian waterway had been ardently cherished for more than a century and had too firm a hold in the national consciousness to be completely stifled by the repression of private monopoly. As the dream of Thomas Jefferson it had been back of the leading motive impelling him to urge time and again transcontinental exploration. In his instructions to Meriwether Lewis, when the Lewis and Clark expedition was about to set out, he says: "The object of your mission is to explore the Missouri River, and such principal streams of it, as by its course and communication with the waters of the Pacific Ocean, may offer the most direct and practicable water communication across this continent, for purposes of commerce." The same idea of the larger use of the Columbia as one of the two connecting channels of a transcontinental waterway had been an important feature of the imperial project of John Jacob Astor. And the Hudson Bay Company had actually used it for a generation as its main highway in conducting its widely extended operations in this section. It had, as we have seen, been the sole reliance in their need of transportation facilities of the widely scattered but exceedingly thriving Oregon communities down to about 1880. And though the railways, fortified as they were with monopoly privileges at the portages along the Columbia, and reinforced through the policy of the private canal company at Oregon City, won out against the upper river traffic: on the lower Columbia the ocean export trade was steadily growing with the general community growth induced by the recently completed railway connections with the East.

But whether the commerce on the different sections of the river waxed or waned, certain influences were promoting the inception of projects of improvement. The pressure of the people in this direction and the activities of their representatives in Congress may always be taken for granted. It is rather the progress of their interests with the engineers of the United States army and the standing the movement was thus getting in administrative circles to which I refer. At the mouth of the Columbia the charts of Admiral Vancouver, of 1792, that of Sir Edward Belcher, of 1839, that of Captain Wilkes, of 1841, the United Coast Survey chart of 1851, and those from periodical surveys thereafter accumulated data from which the problem of widening and deepening the channel across the bar could be solved. The tonnage crossing the bar was increasing year by year. In 1882 the engineers were ready with the details of a project for permanently improving this feature of the river. The value and availability of the waterway from Portland down could never be questioned. Its improvement to navigation by deep-water craft was of utmost importance to the entire Northwest. Not until 1884 was any considerable portion of the produce of this section diverted by the railroads to Puget Sound. The original project for improvement was adopted in 1877.

On the upper river the engineers were making extensive preliminary examinations and reconnaissance surveys while it was still the sole channel of transportation for that rapidly developing "Inland Empire." The exceedingly favorable reports of Major Michler, of 1874, of Major Powell, in 1879, and of Lieutenant Symons, in 1881, gave the demand for an "open river" standing in the inner administration circles. This part of the river was already receiving small appropriations for the removal of minor obstructions in the early seventies. On October 12, 1877, the Secretary of War approved the original plan for canal and locks around the rapids in the Columbia, where it passes through the Cascade Mountain Range. In thus tackling one of the two formidable obstructions to navigation the national government may be said to have committed itself to the securing of a channel available to navigation throughout this system of inland waterways.

The task with which the national government was confronted in having undertaken to secure to the people of the Pacific Northwest the advantage of inland waterways is probably best indicated by pointing out the obstructions that are, or were, encountered in passing from its mouth to its source. From the ocean up to the mouth of the Willamette, about ninety-eight miles, where the original depth was from ten to fifteen feet, ocean vessels now pass drawing twenty-five feet of water. The improvement was effected mainly through dredging. From the mouth of the Willamette to the "Cascades," about forty-three miles farther up the river, it is open, and in its natural state has an available depth of eight feet. At the "Cascades" for four and one-half miles it is so contracted in width in passing through mountains that it partakes of the nature of a gorge. In the upper first half mile of this there is a fall of twenty-four feet. Throughout the lower four miles of the gorge the slope is not so steep, but the channel is much obstructed with boulders and reefs. This first great obstruction could be obviated only by a canal and locks. Such works were so far completed as to be opened to navigation in 1896. Proceeding up the river, for forty-five miles, it was again open with a depth of some eight feet. But here most formidable obstructions are encountered—The Dalles and Celilo Falls. In the course of nine miles the river passes over falls and rapids and through contracted channels that completely block navigation. The fall in this distance is eighty-one feet. For some years these obstructions seemed to puzzle the engineers with their magnitude and to appal Congress through the size of the estimated cost of improvement to open navigation around them. Work has barely begun on an approved project for a canal and locks. Proceeding on beyond Celilo Falls we have again a stretch of open river of some 198 miles, with an available depth of four or five feet. The Snake, the largest tributary, which enters the Columbia 110 miles above Celilo Falls, has 146 miles of navigable channel similar in character to that of the main stream. Were we to proceed along that tremendous stretch of river until we came to the international boundary only two more considerable obstructions would be encountered—Priest Rapids and Kettle Falls. These will require canals and locks. Not only are improvements in progress on the two main tributaries above the mouth of the Snake, the Spokane and the Pend Oreille, but the engineers have reported favorably for the removal of the obstructions in about all, if not quite all, of the stretches intervening between those more formidable rapids that will require canals and locks.

Turning back now to the Willamette to note its problems, a complete break in navigation—when the river was in its natural state—was encountered at the falls fifteen miles above Portland.

A private corporation, subsidized by the State of Oregon, constructed a canal around these.

Confronted by problems of the character indicated above the national government has made and, on the recommendations of its engineers, proposes to make improvements at different points of the following nature: With the object of concentrating the river to a moderate width at its mouth and to discharge it as a unit to the sea, thus securing a strong scouring effect with the tidal outflow, the original project, adopted in 1884, provided for a single jetty on the south side of the entrance about four and one-half miles long. This work caused an increase in depth over the bar from twenty to thirty-one feet from 1885 to 1895. But as this desired increase was not permanent, in 1903 a project contemplating an extension of three miles, to the jetty previously constructed, was adopted. A continuing appropriation for the completion of this work has been made. The depth desired is forty feet. The work from the beginning of the original project to the completion of the present extension will cost about $4,500,000. The two projects were based on the same conception of the nature of the problem and the earlier work is fully utilized in the more extended later project.

The project under which the improvement of the Columbia and lower Willamette is proceeding was adopted in 1902. It proposes a twenty-five-foot channel to the sea by the construction of controlling works and dredging. The estimated cost was about $2,800,000. The port of Portland, using funds obtained from taxation in Portland, has co-operated to the extent of providing about $1,700,000. Up to June 30, 1904, the national government had applied about $1,500,000 on this portion of the river. Turning to the main lower branch of the Columbia, the Willamette, the situation calls either for the purchase of the existing canal and locks at the falls from a private corporation or the construction of a new system of locks and canal. The board of engineers that investigated this matter in 1899 recommended an expenditure of $456,000, either for the acquiring of the present canal and locks, or the building of new ones. The corporation owning the existing improvements declines to sell at the valuation placed upon them by the board of engineers, though the board arrived at its figures through capitalization of the net earnings from the canal at fair rate of interest as well as by estimates based on cost of reconstruction. Though these locks were built thirty-five years ago (the state furnishing $200,000, about two-thirds of the cost of construction), the legislature of Oregon, in 1907, appropriated $300,000 "contingent upon the United States appropriating the sum of $300,000, or a sum sufficient to acquire by purchase, condemnation, or construction," a canal around the falls at this place. In the Willamette, above these falls, the problem of improvement is quite similar to that, say, of the Illinois River. The Willamette drains the bed of a former arm of the ocean and has not the firm banks of the upper Columbia and its tributaries. These represent channels worn in a sheet of lava that was universally spread over that region. Something like half a million has been used on the upper Willamette and its tributaries, mainly in dredging and snagging, in other words, in maintenance.

At the cascades the project that was adopted in 1877 was not completed in modified form, so as to be open to navigation, until 1896. It has cost some $4,000,000, and provides for the passage of boats of a maximum draft of seven feet. But to open the river at the cascades without opening it at The Dalles-Celilo obstructions, forty-five miles above, answers comparatively little purpose. The "Inland Empire" lies on beyond Celilo Falls. The problem presented by these latter obstructions seems to have quite appalled the earlier engineers. Several projects have in turn been recommended for overcoming these obstructions. The first contemplated a canal and locks and some straightening of the river at an estimated cost of over $10,000,000. A plan for a boat railway was next adopted and appropriations were even made for entering upon the construction of it. It was expected to cost $3,000,000. The river men objected and the engineers do not seem to have been quite sure of its practicability. The project that now stands contemplates a continuous canal sixty-five feet wide at the bottom and eight feet deep. The canal is to have four locks and is estimated to cost something over $4,000,000. As the Secretary of War conditioned the beginning of work upon it upon the United States securing the right of way free of cost, the State of Oregon purchased the right of way at a cost of $70,000 and conveyed it to the United States. In order to obtain some relief for the producers in the region above this point from the exorbitant freight charges of the railways, the State of Oregon had also, in 1906, at a cost of $165,000, built a portage railroad around the obstructions.

The improvements in the main river and its tributaries above Celilo Falls consist mainly in blasting obstructing rock and boulders, raking gravel bars and building concentrating dikes. These had, up to June, 1904, cost some $300,000. There are more recent recommendations for additional improvements to the amount of $400,000 more. The wisdom of having as much as possible of the upper river and its tributaries in good navigable condition at the time of the completion of The Dalles-Celilo project is evident.

The effect to be anticipated from an "open river" on freight charges may be illustrated in several ways. The present rate on wheat from Lewiston-Clarkson, Idaho (a little below the head of navigation on the Snake), to Portland is $5.20 per ton. A most reliable river captain holds that this rate would be reduced to a figure between $1.60 and $2.10 per ton. As the rates on heavier commodities along the Mississippi, per ton mile, are about one-tenth of the present rail rates along the Snake and Columbia waterways, such an estimate seems reasonable. For a distance of eighty-eight miles, from Portland to The Dalles, the rate on salt is $1.50 per ton on car-load lots, and $3.00 on less than car-load lots. The corresponding figures for a distance 100 miles farther, to Umatilla, where no river competition exists, are, respectively, $7.50 and $12.00 per ton, or four times the water rates.

The area drained by the Columbia and its tributaries comprises some 250,000 square miles. While there is more waste area in this than in an equal area of the Mississippi basin, it must be taken into consideration that some of this and in widely separated sections is selling at $1,200 an acre. The additional value that will be given to this vast area by an "open river" will make the cost of the improvements of the Columbia seem very small. That improvement will call into active operation many industries that wait only for the presence of reasonable transportation facilities to spring into life. The extension of irrigation enterprises will only equalize the flow of the streams in a salutary way for the interests of navigation. With the waterways of the Columbia basin open, as the expenditure of a reasonable sum will suffice to improve them, the Pacific Northwest will probably equal in wealth any other most favored section of like area in the country.

With the projected improvements completed, and a few more minor ones on the upper Columbia, the Pacific Northwest would have transportation facilities comparable with those that will be possessed by the Trunk line territory when New York's project for making a ship-channel of the Erie Canal is completed. What the Pacific Northwest system would lack in the size of cargo it could float it would make up in being a more direct route and in being available during more months of the year.

RECLAMATION OF ARID WEST BY FEDERAL GOVERNMENT

By Arthur P. Davis,
Chief Engineer United States Reclamation Service.

When the President approved, on June 17, 1902, a bill known as the Reclamation Act, the United States entered upon a policy of internal improvement along novel lines. Many millions have been spent upon internal improvements, but none of them on a commercial basis, that is, the beneficiaries of the expended funds have never been required to return the cost of the improvements as is required by the Reclamation Act.

The preliminary stage of survey and examination for the selection of projects is now practically passed. The second stage of construction is well advanced and large areas of land have been placed under irrigation. The third stage, that of settling the various projects with prosperous settlers and collecting from them the cost of the works, has just been entered upon. The novelty of this feature, together with other important obstacles constitutes this third stage the most difficult of all.

In all, twenty-six projects have been approved by the Secretary of the Interior and construction has commenced on twenty-five of these, several having been nearly completed. On the passage of the law, a sum of money amounting to nearly $5,000,000 was made immediately available by the terms of the act. During the stage of organization, survey, and examination, the expenditures were relatively light and the fund continued to accumulate under the provisions of the law by the sale of public lands in the West. As construction was undertaken, however, the expenditures increased, and as new projects were taken up the increments augmented until now the accumulated funds have practically been exhausted, and during the future years the outlay will probably be governed by the current receipts from various sources.

Salt River Project, Arizona

About twenty years ago began a series of years of unusually large run-off in the Salt River basin in Arizona. The successive high-water periods, showing a large amount of surplus run-off year after year, attracted public attention and encouraged the construction of canals and development of irrigation until these enterprises reached far beyond the capacity of the river in ordinary years. In 1898, like the backward swing of the pendulum, began a series of unprecedented dry years, the run-off for several years being below the yield during the recollection of the oldest inhabitant.

The hot arid climate makes all crops absolutely dependent upon irrigation in this region, and long-continued drought led to the death of large and valuable orchards, vineyards and alfalfa fields upon which great expenditures had been made. In attempting to save property in all parts of the valley hardship was caused even to the oldest irrigators with the best water rights. Under these circumstances the legislature of Arizona provided for preliminary investigations of the feasibility of water storage on upper Salt River, which were carried out in co-operation with the Geological Survey in 1901. A large and feasible reservoir site was surveyed and a foundation for a dam explored with diamond drills.

Unusual difficulties were presented by the isolation of the locality and the extreme roughness of the surrounding country, which was of a volcanic origin and scored by profound box canyons. Those conditions made it extremely expensive to import large quantities of heavy articles, such as cement and fuel. Investigations revealed the presence of suitable materials for the manufacture of cement at the dam site, but the large quantity of fuel required for the necessary power for manufacturing the cement and building the dam presented great difficulties. The little wood that was available was scattered and of poor quality. It was decided to develop water power by diverting the river and carrying it through canals and tunnels for a distance of about eighteen miles and dropping it about 250 feet. The towns of Phœnix and Mesa co-operated in the construction of a road by issuing over $70,000 in bonds for the purpose. Fuel oil imported from California is freighted from Mesa over this road. This oil is used in the kilns

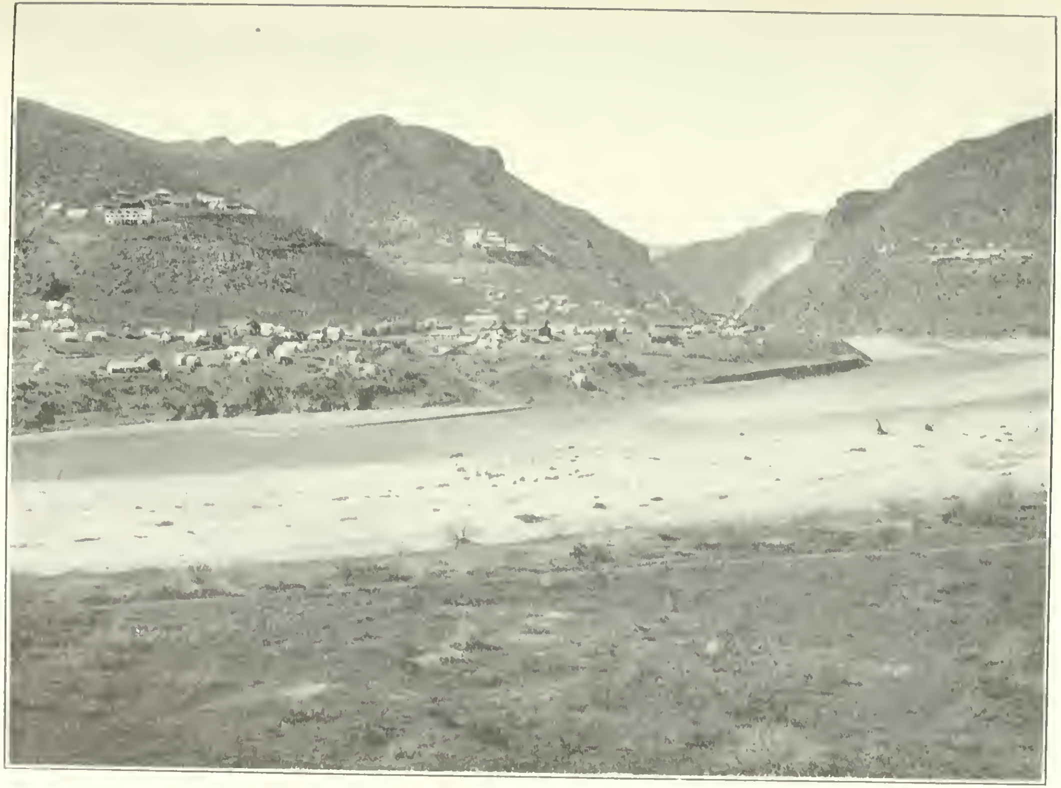


PLATE I. Roosevelt dam site, looking down-stream. Buildings in upper left, engineers' camp; upper center, cement mill and sand crusher; on the right, contractor's camp; lower bench, temporary town of Roosevelt, which will be submerged when reservoir fills.

for burning cement, and water power is used to run machinery in the cement mill and to handle the rock and mortar for the dam.

The little sand that occurs in this vicinity is badly mixed with adobe mud and is of very poor quality. It was found that a much higher grade of sand could be manufactured by crushing dolomite, which occurs conveniently near the dam site, and a mill was erected for this purpose. In the foundations of the various mills and buildings large quantities of lime were used, which were also burned at the dam site. Such works as those always require large quantities of lumber for concrete forms and temporary works of various kinds. It was found feasible to install a saw-mill in the neighboring mountains for this purpose, and about 3,000,000 feet of lumber have been sawed and delivered upon the work.

The dam on Salt River is to be built just below the mouth of Tonto Creek, where the river flows through a profound gorge. From foundation to coping the dam will be about 280 feet high, and the reservoir will have a capacity of about 1,300,000 acre feet. The power developed for the construction of the dam will, after its completion, be transferred to the valley for pumping water from wells to increase the water supply for irrigation. Arrangements have also been made for transferring a portion of this power to the Gila River Indian Reservation for supplying the Indians with irrigation water by pumping.

The contract for this dam was let to James O'Rourke and Company, of Galveston, Texas, in April, 1905. Since the contractor began work an unprecedented series of excessive floods have greatly hampered the work, having washed out the contractor's coffer-dam four successive times and filled up excavated portions of the foundation. The contractor has, however, succeeded in placing the foundation in the river and bringing the upstream portion of it to the top of his coffer-dam, so that such disasters are not to be feared in the future.

The great flood of November, 1905, also washed out the Arizona Dam, just below the mouth of Verde River, which served as a diversion dam for the Arizona Canal and the other canals on the north side of Salt River. This north-side system was purchased by the Secretary of the Interior with reclamation funds in 1906, and a concrete dam for diverting water into it is being constructed at a granite reef, below the old Arizona Dam. The entire canal system on the north side of Salt River, serving at present over 60,000 acres of land, is being operated by the reclamation service, a temporary dam being maintained in the river at the head of the canal, pending the completion of the concrete structure below.

The storage system under construction is expected to serve an area of 180,000 acres of land in this valley, which can be increased by the extension of pumping development with the power available from the project until the limit of the underground water supply is reached. The reservoir dam is 25 per cent completed. The Granite Reef Dam is 38 per cent completed. The Salt River project as a whole is 62 per cent completed.

Yuma Project, Arizona-California

The Yuma project provides for the construction of a diversion dam across Colorado River about ten miles northeast of Yuma, Arizona. From this diversion dam two canals will be built; the one in Arizona to cover about 83,000 acres of land, and the one in California, about 17,000 acres. The project provides for an efficient means of sluicing out the head of the canal by utilizing the fall secured by the dam. The dam will have a total length of 4,780 feet, a maximum width of 257 feet, and a maximum height of 19 feet. The work on the dam was begun July 20, 1905; but the contractors made slow progress and it was finally taken up by the government under force account.

One of the chief difficulties encountered was the transportation of fuel and other supplies from the railroad to the dam site. The roads were very bad and the navigation of the river so poor that it was frequently impossible to keep the machinery supplied with fuel. It is now the intention to build a railroad from the main line of the Southern Pacific to the dam site on the California side of the river. As soon as this is completed, work will be actively pushed on the dam, and it is expected that some water will be turned into canals in 1908, though the full season's supply cannot be furnished until 1909.

Orland Project, California

The Orland project contemplates the storage of water in the foothills on the headworks of Stoney Creek and its diversion and

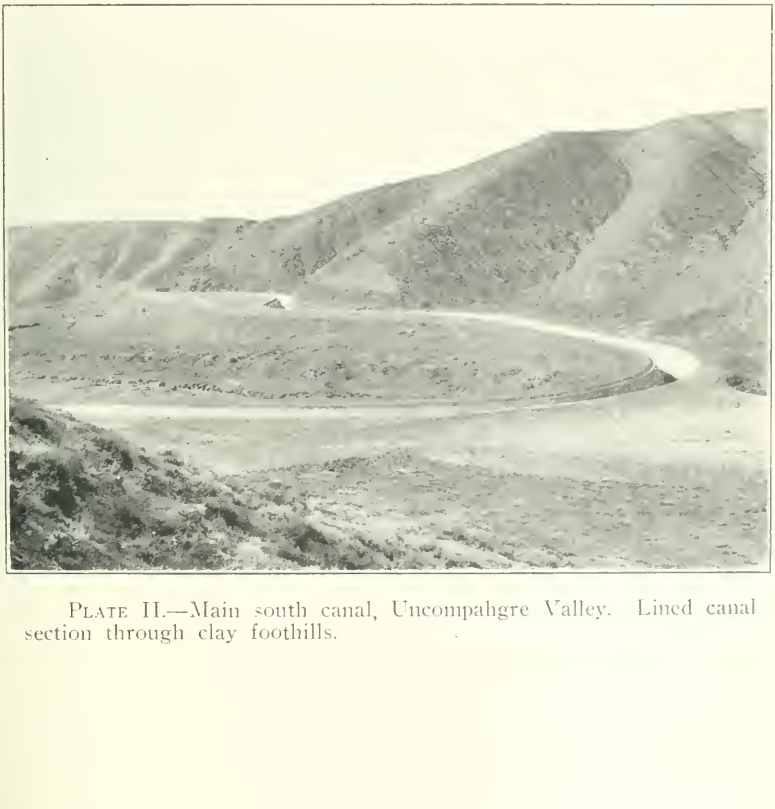


Plate II.—Main south canal, Uncompahgre Valley. Lined canal section through clay foothills.

use in the vicinity of the town of Orland, California. Options have been obtained for the rights of way necessary on the reservoir site and also for the two existing ditches near Orland. Negotiations are completed with the Central Canal and Irrigation Company, for the amicable adjustment of claims to the waters of Stoney Creek, which will remove all complications of this nature. Prospects are good for the beginning of active construction during the year 1908 for the irrigation of about 15,000 acres of land. The project, however, is susceptible of considerable extension beyond this point by the utilization of other reservoir sites and by pumping water from the underground supply. This project is regarded as an integral part of the general development of the Sacramento Valley.

Uncompahgre Valley Project, Colorado

The Uncompahgre Valley in Colorado has been irrigated for many years, and the development of irrigation has proceeded beyond the available water supply of the Uncompahgre River, some of the waters originally appropriated having been diverted by later ditches in the valley above. To relieve this condition, and also to bring under irrigation a large area of land in the valley still unwatered, the Reclamation Service undertook the construction of a tunnel through the mountain range to bring water from the Gunnison River into the Uncompahgre Valley. The length of the tunnel is 30,515 feet, and the works include a number of small tunnels and a great deal of heavy construction in canals through rough country.

The contract for the construction of the main tunnel was let, in 1904, to the Taylor-Moore Construction Company, but financial difficulties caused its abandonment by the contractor on May 27, 1905. Since that time it has been prosecuted by day labor under the engineers of the Reclamation Service. The work has presented a great many difficulties. For a considerable distance the western half of the tunnel follows almost directly under the bed of Cedar Creek, which is composed of loose sand, gravel and mud. In May, 1905, this channel broke through the contractor's temporary timbering, causing an extensive cave-in and resulting in the death of six persons. In August, 1907, Cedar Creek broke through the lining of the tunnel at two different times and places, bringing in large quantities of mud, sand, and gravel, and causing delay to the work. No one was injured by these accidents, however. On December 22, 1906, the drills in the west heading struck a strong flow of water under high pressure, discharging about seven cubic feet per second, and heavily charged with carbon dioxide. The gas quickly filled the tunnel and drove the men out. In order to properly ventilate the tunnel thereafter it was found necessary to sink a shaft near the heading, which involved a shaft of about 700 feet. The work was greatly delayed from this cause, but the water was drained out and the tunnel was cleared of gas so that work was again resumed. Smaller quantities of gas have from time to time been struck in various parts of the tunnel, causing danger and delay, but no lives have been lost thereby. On July 16, 1907, a heavy flow of water was encountered at the eastern heading, which flooded the machinery and drove the men from work. It was more than a month before work could be resumed at this heading. Large quantities of water have been encountered from time to time in both headings, always causing delay and heavy expense. On November 30 the progress of excavating this tunnel was as follows:

East heading	7,933	feet
West heading	14,338	"
Total	22,271	feet
Lining (tunnel complete)	7,781	feet
Distance between headings	8,244	"

The Uncompahgre Valley project was, as a whole, 74 per cent complete on the above date.

Minidoka Project, Idaho

The Minidoka project diverts water from Snake River near the station of Minidoka, Idaho. About 60,000 acres on each side of the river will be irrigated from this diversion point and the canal system for the north side has been completed. A portion of the lands on the south lie above the possibility of gravity distribution, and require the construction of a large dam and the development of power which can be made available at the dam site. The dam was constructed by the Bates and Rogers Construction Company, and is about fifty feet high. Water from this system was deliv-

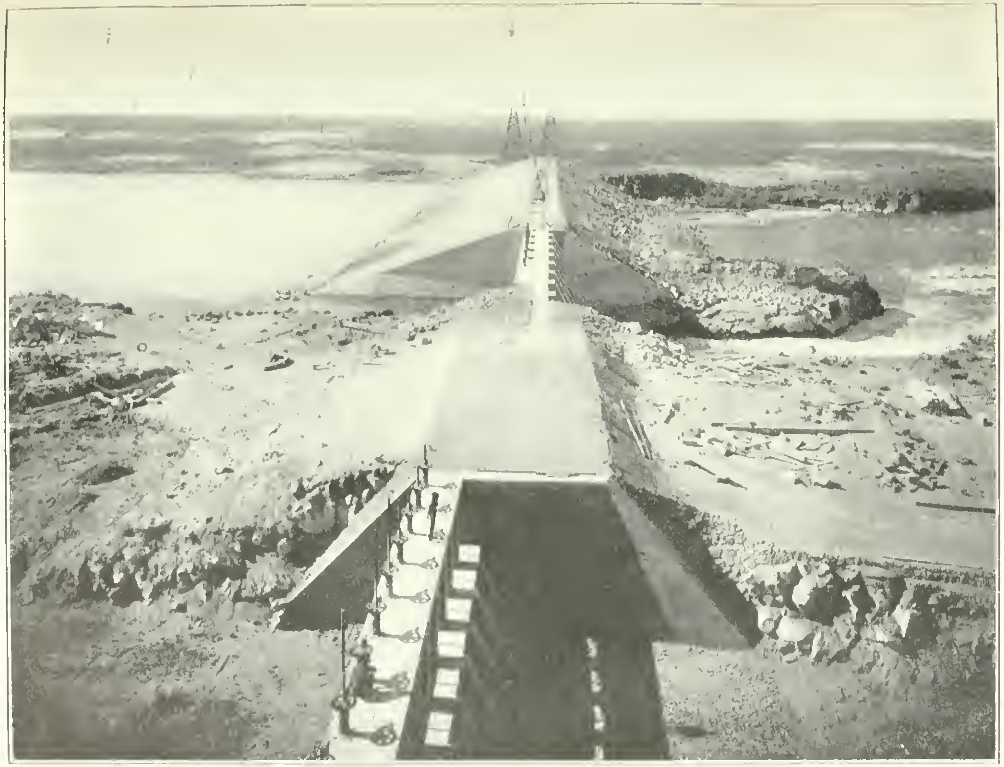


PLATE III.—Minidoka Dam, looking south. Diversion dam on Snake River, 50 feet high, showing towers and cableways, from which rock was placed. Gates of north side canal in foreground. Power units will be installed in the bays in main dam to develop about 10,000 horse power from the water passing through to supply prior rights below

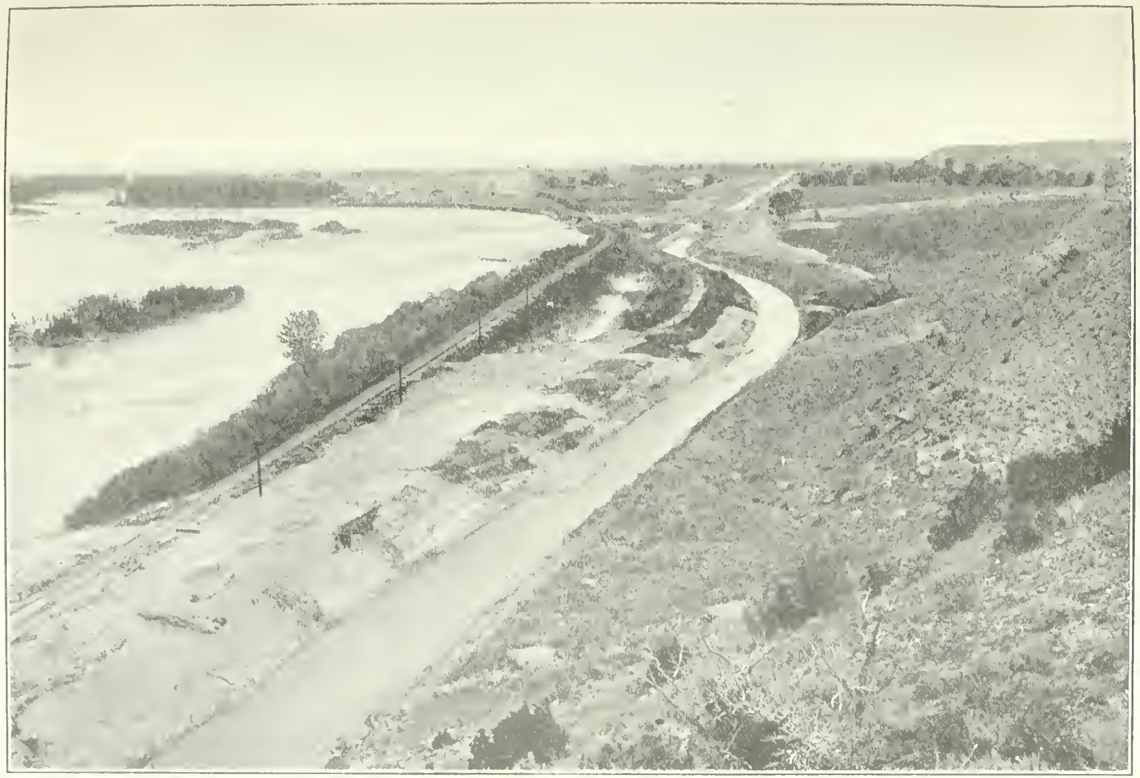


PLATE IV. Huntley canal, looking east. Opened by Secretary Garfield, June 26, 1907. Town of Huntley in the distance.

ered in May to a portion of the land, and about 18,000 acres have been actually cultivated. All the public land for which water is available has been taken and extensive improvements have been made by settlers.

Payette-Boise Project, Idaho

Payette-Boise project provides for the storage of waters of both the Payette and Boise Rivers by storage reservoirs on each stream. The land to be reclaimed is mainly in the Boise Valley, and a large portion of the waters of Payette River are to be brought into the Boise Valley. The unit now under construction involves a dam on the Boise River, which is more than half completed. A large canal will conduct water from this point for storage to a basin known as the Deer Flat reservoir. Two large earthen embankments are required to form the reservoir basin. These embankments are under construction, one by contract and the other by force account. Satisfactory progress has been made, and it is expected that this unit will be completed in 1908.

Garden City Project, Kansas

The Garden City project will obtain water for irrigation by pumping from underground. For this purpose a power plant has been constructed at Deerfield, Kansas, consisting of steam turbines driving electric generators from which the power is delivered to twenty-three separate pumping stations, which will supply water to about 8,600 acres, situated in the vicinity of Garden City. The power plant is practically completed and some of the pumping stations are ready for tests. Water will be furnished to most of the land during 1908, the old existing canal system being used for this purpose.

Huntley Project, Montana

The Huntley project provides for the diversion of water from the Yellowstone River at a point about three miles above Huntley, Montana, on the south bank. The canal and tunnels necessary for this diversion have been constructed to cover more than 20,000 acres of land, and the project as a whole will include about 30,000 acres, twelve miles from the source of the canal. There is a great deal of side-hill work which is very difficult and expensive, and it is found necessary to drop the water to a lower level for the major portion of the lands. The power generated by this fall is used to pump a portion of the water to a higher level to command lands on the top of the mesa. This pumping plant has been completed and will be in operation in 1908. The lands to be reclaimed form a portion of the area which the Crow Indians by treaty ratified by Act of Congress approved April 27, 1904, ceded to the United States. They were formally opened to settlement on June 26, 1907, and a considerable number of entries have been made for which water will be delivered in 1908.

Sun River Project, Montana

The Sun River project provides for the irrigation of a large acreage on both sides of Sun River and the construction of a number of reservoirs for regulating the waters. The first unit, authorized in March, 1906, is now under construction and will irrigate about 18,000 acres in the vicinity of Fort Shaw, for which water will be regulated in a small reservoir on Willow Creek. The main canal for the Fort Shaw unit is under construction and work has been begun on the lateral system. The outlet tunnel and other preliminary work on the Willow Creek reservoir are almost completed. It is expected that a small acreage of land under this unit will be offered for settlement in 1906.

North Platte Project, Wyoming-Nebraska

The North Platte project involves the construction of a reservoir on the North Platte River about fifty miles above Casper, Wyoming, to hold the winter and summer flood waters for use during the low-water period of the late summer, the normal flow of the late summer having been already appropriated and applied to beneficial use by farmers on the lower river, mainly in Nebraska. The reservoir, which has been named the Pathfinder, will have a capacity of 1,000,000 acre feet, and the dam will be about 200 feet high. The contract for this construction was let to the Geddes and Seerie Stone Company, in 1905, and is 40 per cent completed. The contractors are making very satisfactory progress and doing excellent work. It is expected that the dam will be completed

Plate V.—Wasteway of Truckee main canal, Truckee-Carson project, Nevada.

about the end of 1908. The water stored in the Pathfinder reservoir will be diverted for irrigation at various points on the lower river and both sides of the line between Wyoming and Nebraska. At present a diversion dam is under construction by the S. R. H. Robinson and Son Construction Company, near the station of Whalen, Wyoming, on the Burlington road. Satisfactory progress has been made with this dam and it will be completed early in 1908. From this point a canal, with a capacity of 1,400 cubic feet per second, has been constructed and nearly completed to a point about 100 miles eastward, situated nearly northeast of Scottsbluff, Nebraska. This canal at present covers nearly 30,000 acres in Wyoming, and about 75,000 acres in Nebraska, 40,000 of which it is expected will be ready for irrigation in the year 1908. Water was turned into the canal May 5, 1906, and was used for irrigation during that summer upon certain tracts in Wyoming. Its use has been extended during the past season. Construction is being pushed upon the distribution system, and it is expected that over 40,000 acres can be irrigated in Nebraska the next irrigation season.

Truckee-Carson Project, Nevada

The Truckee-Carson project consists of the diversion of waters of Truckee and Carson Rivers upon the adjacent lands, mostly lying in the lower Carson basin. The Truckee waters are carried by a large conduit of 1,400 second feet capacity to the Carson River, a small amount of the water being distributed upon the divide between these rivers. A large diversion dam in the Carson River has been constructed and the water is carried through a large canal to the land south of the Carson River, a small area on the north side being commanded also by a smaller canal. At present 100,000 acres of land are ready for settlement and about 30,000 acres are actually under cultivation. Lake Tahoe will be used as a storage reservoir to serve this project. With the regulation accomplished by this reservoir it will be possible to irrigate about 150,000 acres of land. Several other reservoirs are also contemplated, which will greatly extend the area to be covered. Considerable vacant land on this project is now under irrigation and available for homestead entry under the Reclamation Act.

Carlsbad Project, New Mexico

The Carlsbad project was constructed by private enterprise in the early '90's, but was not successful, either physically or financially. After contending with washouts and various other disasters, the proprietary company in 1905 found itself unable to replace the Avalon dam, which was destroyed by a flood in 1904, and upon which the canal system depended for its supply. The property was transferred to the United States and the Reclamation Service undertook its rehabilitation. Water was delivered to a portion of the lands in May, 1907, and about 20,000 acres will be placed under irrigation in 1908.

Hondo Project, New Mexico

The Hondo project, now practically completed, provides for the diversion of waters of Hondo River into a basin constructed to the north of the river from which the stored waters will be discharged into the channel of the Hondo River below, and diverted upon lands in the vicinity of Roswell, New Mexico. This project contemplates the reclamation of 10,000 acres of land, and some water may be delivered for irrigation in 1908.

Rio Grande Project, New Mexico-Texas

The Rio Grande project contemplates the construction of a large storage reservoir between San Marcial and Engle stations on the Santa Fé Railroad. This reservoir will have a capacity of about 2,000,000 acre feet, and will be ample to completely regulate the entire flow of the Rio Grande at this point. The stored waters will be diverted at various points below to irrigate about 180,000 acres of land, a small portion of which is now under cultivation, with a very uncertain water supply, from the natural flow of the river. By treaty with Mexico 60,000 acre feet of this water will be delivered annually at the head of the Mexican ditch near El Paso for use upon the Mexican side. For this reason Congress made a direct appropriation of $1,000,000 for the payment of a portion of the expense of this project, which is estimated to cost about $8,000,000. A diversion dam is now under construction and nearing completion in the vicinity of Fort Selden, which will divert the unregulated waters into existing canals. The dam will be of concrete and will be ready for service in 1908. Only preliminary work has yet been done upon the reservoir.

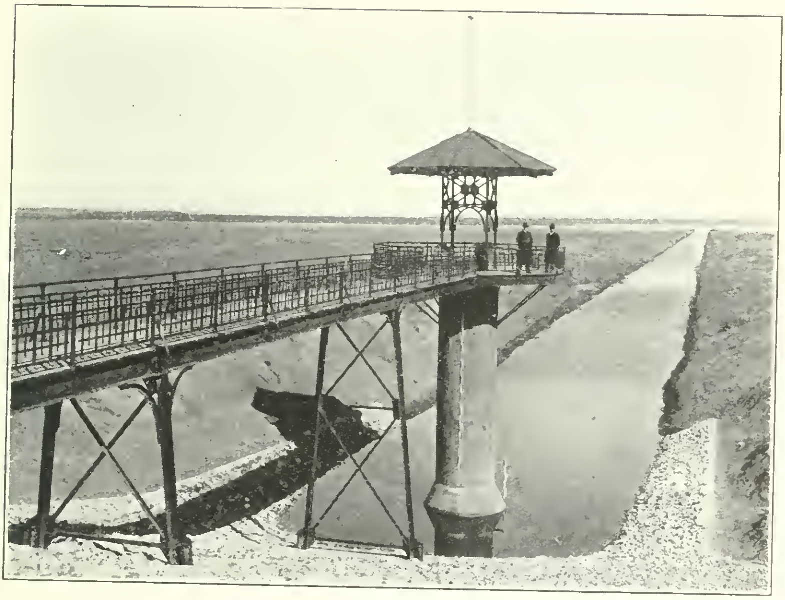


Plate VI.—Outlet tower, Hondo reservoir, New Mexico.

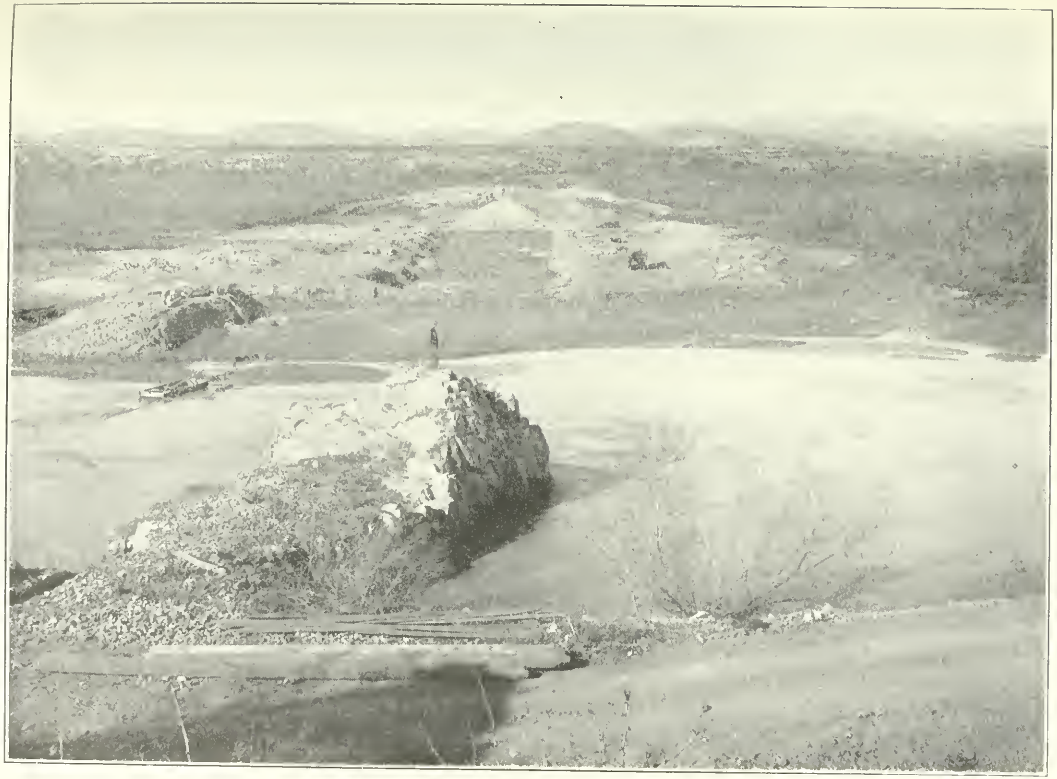


Plate VII.—Site of Leasburg Diversion Dam on Rio Grande. Under construction. Canal gates will be set in Penasco Rock in foreground. Concrete dam will extend from Penasco Rock to join embankment in distance.

Lower Yellowstone Project, Montana-North Dakota

The Lower Yellowstone project will irrigate lands on the left bank of the Yellowstone River, beginning at a point about twenty-five miles below Glendive, Montana, and extending to the junction of the Yellowstone and Missouri rivers. The river will be diverted by a timber and stone dam about twenty miles below Glendive, and the canal will be constructed in heavy cut for several miles eastward from this point until it emerges on the surface of the ground. The project will irrigate about 70,000 acres of land, about two-thirds of which is in Montana and one-third in North Dakota. It involves much heavy construction and includes one direct pumping plant where the power, generated by water falling from the canal to the level of the bottom lands, will be utilized to lift a portion of the water to a bench above the canal and cover about 3,000 acres of additional land. Construction on the main canal is in an advanced stage and a large number of the laterals are nearing completion. It is expected that water will be delivered to a large portion of the land some time in 1908.

Buford-Trenton and Williston Projects, North Dakota

Two pumping projects are under construction on the left bank of the Missouri River which will develop power by the use of the lignite which occurs in the vicinity.

At Williston a large power station has been constructed at the mouth of the lignite mine, and power is transmitted to a pumping plant on the river near Williston and to another pumping plant at Buford. From these pumping plants the water will be discharged in canals to valley lands from Buford to Williston. These pumping plants are in an advanced stage of construction and will be ready to deliver water some time in 1908.

Klamath Project, Oregon-California

The Klamath project is an interstate project involving the reclamation of lands in Oregon and California in the vicinity of Klamath Falls, Oregon, by the use of the waters from upper Klamath Lake and of Lost River. A large canal from upper Klamath Lake to Lost River has been completed by contract, and water was delivered in the past season to lands along its course. The power canal on the right bank of Link River is being constructed, which will furnish power for local use and supply the needs of the company whose enterprise will be superseded by the government canal. This canal will be extended to the right bank of the Klamath River.

Umatilla Project, Oregon

The Umatilla project diverts the water from Umatilla River and carries it through a long conduit to a reservoir near Cold Springs, formed by building a dam across a dry ravine. The headworks and feed canal have been constructed under contract, and work by force account is being vigorously pushed upon the Cold Springs dam. It will be an earthen structure, and the reservoir will have a capacity of 50,000 acre feet. Work is also being pushed on the outlet canal and distribution system and it is expected that a small acreage can be irrigated during the coming season, although it will be impossible to complete the project before 1909.

Belle Fourche Project, South Dakota

The Belle Fourche project utilizes the waters of Belle Fourche River by diverting them at a point near the town of Belle Fourche and carrying them to a reservoir, to be constructed on Owl Creek at its junction with Dry Creek. The diversion dam and a feed canal, both of which are large structures, have been completed, and work is being carried on under contract on the large earthen dam across Owl Creek. Extensive work has also been done on the main canal and the distribution system. Some land will be placed under irrigation in 1908 and is now ready for settlement.

Strawberry Valley Project, Utah

The Strawberry Valley project provides for a storage reservoir on Strawberry Creek, a tributary of Duchesne River, Utah. The stored water will be carried through a tunnel about four miles in length, discharging into Diamond Creek, a tributary of Spanish Fork River. The water will be delivered from the Spanish Fork and utilized upon about 40,000 acres of land in the vicinity of the town of Spanish Fork. Preliminary work for this project is under way. The western end of the tunnel has been opened up and a power plant is being constructed for the development of electric power for construction in the tunnel. The canal used for this power plant will also be utilized for the conduction of the waters to the irrigable lands when these are available. It is expected that the power plant will be completed and active work begun on the tunnel in the spring of 1908. The project, however, will require several years for its completion. In the meantime the canal system can be used for delivering the flood waters of Spanish Fork to the lands which will later receive a full supply.

Okanogan Project, Washington

The Okanogan project in northern Washington provides for the storage of water on Salmon River and its diversion at a point lower down to cover bench land lying between Alma and Riverside on Okanogan River. Work is now in progress on the Salmon Lake reservoir and also on the canal system, and is being vigorously pushed by force account.

Sunnyside Project, Washington

The Sunnyside Canal system of the Washington Irrigation Company was purchased by the Secretary of the Interior, and is being enlarged and improved for the better service of a larger area of land. The old wooden headworks have been removed and permanent works of concrete of larger capacity have been built. The diversion dam partly washed away during the flood in the spring of 1907, and a permanent dam of concrete is being built in its place. It is expected that this dam will be completed the present autumn. The wasteway below Zillah is being reconstructed and put in safe condition to carry the water of the canal when repairs or other emergencies render this necessary. The water for the extension of irrigation under this system will be provided by storage in Lakes Kachess, Keechelus, and Clealum, on the headwaters of Yakima River. Temporary controlling works have already been installed at the two former points and permanent dams below the lakes will eventually be built.

Ticton Project, Washington

The Ticton project receives its water supply from the Ticton River, northwest of the City of North Yakima, and carries it along the canyon wall and over the divide into the Cowiche Basin, where an area of about 30,000 acres can be commanded. The work in the canyon is very heavy, requiring side-hill canyon in rock and a large amount of tunneling. This work is now under way, the excavation and tunneling being done by the government under force account and the canal lining under contract. The power plant for excavating these tunnels has been constructed on the Tieton River and is now in operation, furnishing power to the drills and ventilating machinery. The canal system in Cowiche Valley is under survey and will soon be ready for construction. The waters utilized for this project are appropriated lower down from the Naches River into which the Tieton flows. The water to be diverted from the Tieton will be supplied to the prior appropriators on the Naches by storage in Bumping Lake reservoir, the construction of which will be undertaken next year.

Shoshone Project, Wyoming

The Shoshone project contemplates the storage and complete control of the waters of the Shoshone River by the construction of a dam 310 feet high, eight miles above Cody, Wyoming. The contract for the construction of this dam was let to Prendergast and Clarkson in 1905, but this firm failed and their bondsmen, the United States Fidelity and Guaranty Company, executed a contract with the Secretary of the Interior for the construction of the dam. Temporary diversion works have been completed and the contractor is engaged upon excavating for the foundation of the dam. The work has been delayed by washout of the temporary diversion works, but these have been restored and things are in shape for pushing the work rapidly. The reservoir to be formed will have a storage capacity of about 420,000 acre feet. The water will be allowed to flow down the river and diverted at various points, the principal one being at the Corbett Dam, which is under contract and nearly completed. From this diversion dam water flows through the tunnel known as the Corbett tunnel, about 18,000 feet in length, and emerges on top of the mesa. This tunnel was originally under contract, but the contractor failed and the work was completed by the government on force account. The canal system is now under construction by contract, and it is expected that water will be ready for delivery to about 15,000 acres of land in May, 1908, between the stations of Ralston and Garland along the Bur-

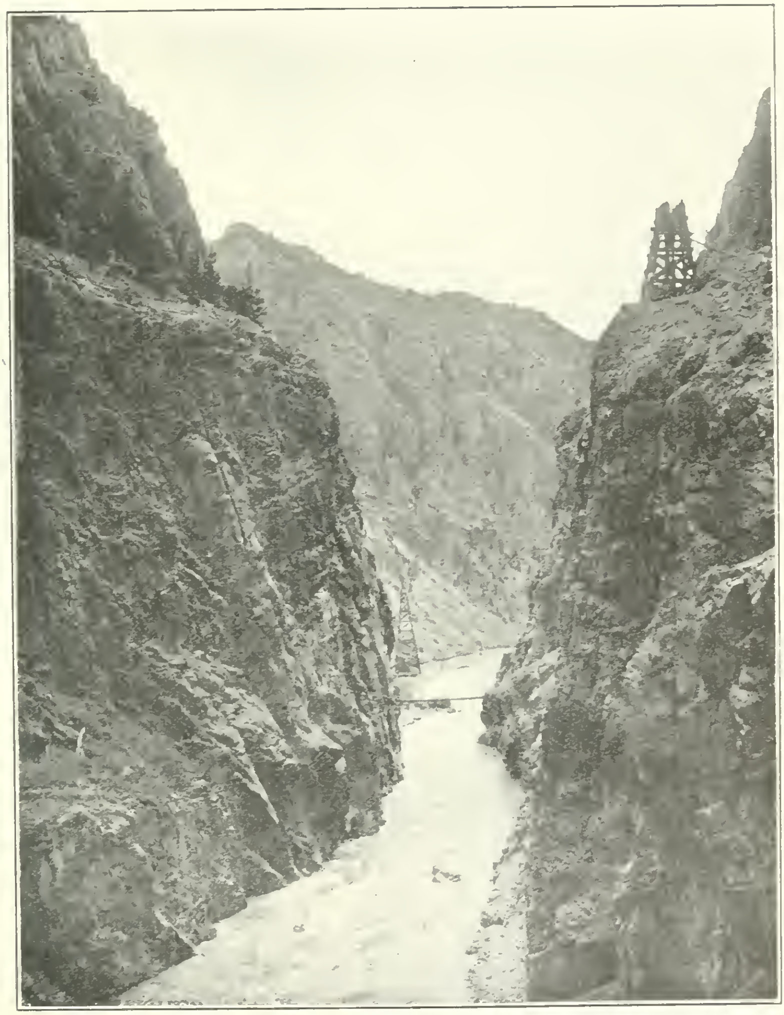


Plate VIII.—Site of Shoshone Dam, Wyoming, looking up-stream. Under construction. Height from foundation to coping 310 feet. It will be the highest dam in the world.

lington Railroad. Additional areas will be covered by the distribution system and placed under irrigation as settlement demands.

The total amount expended from the Reclamation Fund to December 31, 1907, is $33,300,000. The amount available for expenditure during the calendar year 1908 is approximately $7,000,000. The projects now approved and in process of construction, with the irrigable acreage which will be placed under cultivation within the next few years, are as follows:

PROJECT.	Estimated cost.	Irrigable acreage.
Salt River, Arizona	$5,300,000	200,000
Yuma, California-Arizona	4,500,000	100,000
Orland, California	1,500,000	30,000
Uncompahgre, Colorado	6,200,000	140,000
Grand River, Colorado	2,500,000	50,000
Minidoka, Idaho	2,000,000	80,000
Payette-Boise, Idaho	3,600,000	120,000
Garden City, Kansas	320,000	8,000
Huntley, Montana	900,000	30,000
Sun River, Montana	500,000	16,000
North Platte, Nebraska-Wyoming	4,100,000	118,000
Truckee-Carson, Nevada	4,500,000	150,000
Hondo, New Mexico	336,000	10,000
Carlsbad, New Mexico	600,000	20,000
Rio Grande, New Mexico	200,000	10,000
Lower Yellowstone, Montana-North Dakota	2,700,000	67,000
Buford-Trenton and Williston, North Dakota	1,000,000	30,000
Klamath, Oregon-California	1,400,000	50,000
Umatilla, Oregon	1,140,000	20,000
Belle Fourche, South Dakota	3,400,000	100,000
Strawberry Valley, Utah	1,350,000	35,000
Okanogan, Washington	500,000	9,000
Tieton, Washington	1,400,000	24,000
Sunnyside, Washington	2,000,000	50,000
Wapato, Washington	600,000	20,000
Shoshone, Wyoming	4,500,000	100,000
Total	$57,046,000	1,587,000

Some of the above projects are capable of greater extension beyond that indicated above. In addition to this a number of large projects have been investigated and found feasible, but not yet taken up. No detailed estimate of acreage or cost has been made of such projects, but the following table shows a rough approximation on these points:

PROJECTS.	Estimated acreage.	Probable cost.
Little Colorado, Arizona	80,000	$ 4,000,000
Sacramento Valley, California	500,000	20,000,000
San Joaquin Valley, California	200,000	8,000,000
Colorado River, Colorado, Utah, California, Arizona	750,000	40,000,000
Dubois, Idaho	100,000	4,000,000
Lake Basin, Montana	300,000	12,000,000
Las Vegas, New Mexico	35,000	2,100,000
Urton Lake, New Mexico	45,000	2,000,000
Walker and Humboldt Rivers, Nevada	500,000	15,000,000
Red River, Oklahoma	100,000	4,000,000
John Day River, Oregon	200,000	10,000,000
Weber, Utah	100,000	5,000,000
Big Bend, Washington	750,000	30,000,000
Goshen Hole, Wyoming	120,000	5,000,000
Totals	3,780,000	$161,100,000

THE RELATION OF FORESTS TO STREAM CONTROL

By Hon. Gifford Pinchot,
United States Forester, Washington, D. C.

The phenomenal development of industry and the consequent increased demand for transportation have turned attention to our most natural means of inland transportation—the lakes and rivers. It has forced us to realize that our streams, in spite of the tens of millions of dollars appropriated for their development, are becoming less navigable. Increasing amounts of sediment are deposited each year in their middle and lower courses, while the flow of the streams themselves becomes less regular. Navigable with difficulty, if at all, during the summer, they become turbulent and turbid during the spring, overflow their banks, and often carry destruction to life and property. The skill of our engineers is taxed to the utmost to keep harbors and rivers free from the constantly recurring deposits of sediment. Because of the rapidly increasing tonnage and draft of vessels, it is not sufficient merely to maintain the present depth of our rivers and harbors. Their depth must be constantly increased or they will gradually fail to accommodate the larger vessels, and such of them as fail must finally be abandoned altogether.

More powerful dredging machinery is constantly coming into use. Efforts are common to prevent the deposit of sediment by confining streams to channels narrow enough to accelerate the current and so lessen the rate of deposition. This method of channel adjustment has accomplished great good in improving the courses of many of our rivers, but it cannot and does not claim to regulate in the least the water supply of the streams.

The method of storage reservoirs, extensively tried in France, has been suggested as a method of river improvement in the United States. Reservoirs filled in the spring freshet season serve to increase the flow later in the year when the streams run low. Floods may thus be prevented, and the immense loads of silt which they would otherwise have brought down are thus kept from being dropped by the slow current in the lower channel. Theoretically this method of storage reservoirs will accomplish all that can be desired in regulating stream flow and preventing excessive deposition, if only adequate storage capacity is available. In practice, too, it will doubtless be efficient in places where the erosion is not rapid. But the great disadvantage of this method, as is proved by the experience of the French engineers, lies in the fact that the reservoirs themselves become clogged with detritus and must sooner or later, varying with the forest conditions and the character of the topography drained, be either abandoned or maintained by constant clearing out at large expense.

The engineers of the United States Reclamation Service fully realize that the amount of solid matter carried by a stream is a very serious problem in connection with the construction of storage reservoirs for irrigation purposes. Streams from barren watersheds abound in violent freshets which carry with them eroded sediment, to be deposited in the first pool of still water they encounter, and thus reduce the storage capacity of the reservoirs into which they flow. Mill dams completely filled with sediment are to be seen everywhere, and offer good demonstrations of the damage to storage reservoirs from silting.

The regulation of streams by storage reservoirs is really an imitation of what nature is able to accomplish by the forests. Forests at the sources of the streams are veritable storage reservoirs, and without them no artificial remedy can be either adequate or permanent. Erosion destroys reservoirs, and must be controlled if reservoirs are to succeed. This can be done only by conserving or restoring the forests. The forest cover alone can reduce the amount of sediment carried by water, and make possible the permanent improvement of inland waterways. To check erosion by reforestation, work must begin in the highlands, because there the slopes are steepest, the rainfall greatest, and the action or frost most considerable, and therefore the process of erosion is most rapid and the results most destructive.

No one will deny the necessity for engineering methods to cope with the moderate deposits of silt and the seasonal irregularities in flow, which may indeed be lessened by forest cover, but which are unavoidable so long as the sun shines and the rain falls. Yet it remains true that a forest cover interposed between rain and rock affords the best natural means for regulating streams and reducing the loads of detritus. Without such a forest cover every attempt to improve the regimen and the channel of a stream will be little more than a temporary expedient.

Both wide experience and scientific investigation have shown that there are two functions exercised by the forest in relation to stream-flow.

1. Its tendency to reduce the difference between high and low water, an influence which is of most importance in the distribution of flood crests, and in maintaining a steady flow of water during the different seasons of the year and during cycles of dry and wet years.

2. Its value as a surface protection against soil erosion, thus reducing the solid burden of storm waters, and decreasing the deposits of sand and silt, which are the causes of shallow and changing channels.

These two functions follow from the very nature of the forest as a soil cover. The roots of trees penetrate through the soil to the underlying rock, where they fix themselves in the crevices, and in this way hold in place the loose soil and prevent slipping and washing. The crowns of the trees break the force of the rain and also protect the soil from being carried away to the lower valleys during heavy storms. The leaves and the branches allow the rain to reach the ground but gradually; after a rain, water continues to drip from the crown for several hours, and the soil is thus enabled to absorb the greater part of it. Screened from the rays of the sun and covered with a surface mulch of fallen leaves and humus, the soil remains loose and granular in structure and is therefore capable of imbibing and retaining water with sponge-like capacity. It is strewn with fallen leaves, branches, and trunks, and traversed by a net-work of dead and live roots which impede the superficial run-off of water after heavy storm. This retardation of the superficial run-off allows more of it to sink into the ground through the many channels left in the soil by decayed roots. Surface run-off of rain water is wasteful and destructive, and unless artificially controlled serves as a rule no useful purpose and may inflict great loss. Sub-surface drainage makes the best use of the total precipitation that reaches the ground. It serves both for the sustenance of plant life and for the flow of streams. Accordingly the agency of the forest cover in increasing the seepage run-off at the expense of the surface run-off is the most important function which the forest performs in relation to water supply.

A common conception of the effect of forest destruction upon climate is that it reduces the amount of rainfall. Because springs become dry and streams shrink in a deforested region, it is assumed that less rain must fall. Whether or not there be any truth in this assumption (I believe there is), it is certain that the main cause of the observed facts is the profound effect which forest destruction has upon the course which the water takes after it reaches the ground. The greatest influence of the forest is not upon the amount of rain which falls, but on what becomes of the rain after it falls. The water that sinks into the ground passes for greatly varying distances beneath the surface before reappearing, and is thus drawn off gradually from the forested watershed and supplies the brooks with pure water relatively free from detritus.

How active a part is played by the forest in regulating the run-off is clearly shown by actual measurements of the flow of streams which drain forested and unforested watersheds. A typical illustration of streams from barren, treeless watersheds may be found in the flow of Queen Creek, in Arizona.[1] This stream discharges only in violent freshets, recurring usually as great flood-waves which subside almost as soon as they arise. The area of the drainage basin is 143 square miles, of which 61 per cent is above an elevation of 3,000 feet. The rainfall is estimated to be about 15 inches. The maximum flood discharge of Queen Creek in 1896 was 9,000 cubic feet per second, and the mean discharge was 15 cubic feet per second; during a large portion of the year the stream was entirely dry.

Cedar Creek, in Washington, is typical of streams flowing from timbered watersheds.[2] The basin of Cedar Creek lies on the western slope of the Cascade Mountains and is covered with a dense forest and a very heavy undergrowth of ferns and moss. The drainage area is the same as that of Queen Creek, 143 square miles. The precipitation for the year 1897 was about 93 inches for the lower portion of the basin, and probably 150 inches on the mountain summits; in spite, however, of the fact that the precipitation in Cedar Creek basin was from six to nine times more than that in Queen Creek basin, the maximum flood discharge of Cedar Creek for 1897 was but 3,601 cubic feet per second, as against the 9,000 cubic feet of Queen Creek. On the other hand the flow of Cedar Creek was continuous throughout the year, and the minimum discharge was never less than 27 per cent of the mean for the year. The mean discharge of Cedar Creek was 1,089 cubic feet as against 15 feet for Queen Creek. This radical difference in the behavior of the two streams can be explained only by the difference in the soil cover of the two basins. Cedar Creek basin is covered with a heavy forest, while Queen Creek basin is almost entirely bare, with but a few scattering pinion trees and a little brush or grass.

---

[1] Eighteenth Annual Report of the Geological Survey Part 4, Hydrography.

[2] Nineteenth Annual Report of Geological Survey, Part 4, Hydrography.

Mr. Marsden Manson,[3] in discussing the stream flow from certain points on the Yuba River basin, California, makes a very interesting comparison between its two branches, North Fork and South Fork, of which the first has a forested and the second a denuded basin. Both of the catchment areas lie on the western slope of the Sierra Nevada, and have exposures of marked similarity.

The south branch of the North Fork has a watershed area of 139 square miles, which gave in 1900 a maximum run-off of 113 cubic feet per second, or 0.8 cubic feet per second per square mile. This drainage area is well covered with timber and brush, and for four months gives a minimum run-off of 1,441,125,000 cubic feet.

On the South Fork, above Lake Spaulding, there is a watershed of 120 square miles from which the scattering timber that once existed has been cut off. The run-off of this area is practically nothing for four months in each year, because of this absence of forests. If this area were afforested and gave a minimum run-off of 0.8 cubic foot per second per square mile, the discharge would be 100 cubic feet per second, or equivalent to 1,036,800,000 cubic feet of effective storage capacity. To supply water for mining and power purposes a number of costly storage reservoirs have been built on the South Fork. By reforesting the small watershed a natural reservoir would be created whose storage capacity would be almost equal to the storage capacity of all the reservoirs[4] above Lake Spaulding dam.

---

[3] Features and Water Rights of Yuba River, California, Bulletin 100, Office of Experiment Stations, U. S. Department of Agriculture. 1901.

A careful study of the behavior of the streamflow on several small timbered and non-timbered catchment areas in the San Bernardino Mountains of Southern California, made by Professor Toumey for the Forest Service in 1902, brought out in a most convincing manner the effect of the forest in decreasing surface run-off and sustaining the flow of mountain streams. Three timbered drainage areas were studied. These gave during December—a month of unusually heavy precipitation—a run-off of but 5 per cent of the heavy rainfall for that month; during the following months of January, February and March, they gave a run-off of approximately 37 per cent of the total precipitation, and three months after the close of the rainy season still supported a well-sustained streamflow. At the same time, the similar and neighboring non-timbered catchment area under observation gave during December a run-off of 40 per cent of the rainfall, and during the three following months a run-off of 95 per cent. In April the run-off was less than one-third of that from each of the forested catchment areas, and in June the stream from the non-forested area was dry.

Streams flowing from barren, treeless watersheds, carry an amount of gravel, sand and soil which is simply enormous compared to the amount in streams from timbered areas. Thus the United States Geological Survey determined the amount of silt carried by the Gila River at the Buttes, a stream whose basin and regimen is similar to that of Queen Creek, of Arizona, to be 10 per cent of the volume wet or 2 per cent of solids. To appreciate these figures it must be remembered that one-fourth of one per cent of solid burden in the stream is enough to make the water turbid.

As long as the ground is protected by a natural covering of forest growth, rainfall has very little erosive action. It is only after the ground is laid bare by the removal of the forest that the erosion of the soil attains dangerous proportions.

There has, of course, always been, even when the natural forests were unimpaired, some erosion, especially in the watersheds of streams in the Southeast and Southwest, but not to the extent which now obtains, and the present erosion is not only excessive, but is yearly increasing. It is the price, and in a large measure the product, of necessary agricultural and industrial development under defective methods of work. According to studies of Humphreys and Abbott the wearing down of the earth's surface over a region such as the Mississippi Valley is something like one foot in five thousand years, independent of human action. At such a rate of erosion the amount of sediment carried by the Mississippi River before the dawn of civilization could not be more than 70,000,000 tons per year. According to Professor Shaler the wearing down of the Mississippi Valley under complete tillage will be about the same as that of the Valley of the Po in northern Italy, or one foot in one thousand years. At such a rate of erosion, the solid burden of the Mississippi River should be 350,000,000 tons. But the amount of solid matter carried every year by the Mississippi River was estimated several years ago to be 400,000,000 tons. In other words, the erosion had then reached, if not exceeded that of the Po Valley. It is greater now. The formation of soil through underground decay of the rocks cannot keep pace with such a rate of erosion. Unless measures are taken to check it the fertile layer of soil must gradually disappear, as has happened already over large areas in the Old World from precisely similar causes.

---

[4] The aggregate capacity of all the reservoirs is 1,375,000,000 cubic feet.

The ruinous effects of the destruction of mountain forests upon the navigability of streams and the cultural results of human labor have long been felt by most European countries and attempts have been made to remedy them. France in particular has learned by bitter experience how terribly the lowlands suffer when the mountains lose their forest cover, and has now proved by practical demonstrations that the losses produced by forest destruction can be repaired only by reforestation.

During the French Revolution of 1789 extensive clearings were made in the forests of the Provençal Alps. The French Government early recognized the danger which such bare areas threatened to property and industry, and emphasized the importance of reforestation. In 1842 the classical investigations by Surell made it evident that forest clearing was responsible for most of the damage caused by mountain torrents, and that in reforestation lay the remedy. Laws were enacted in 1860 and 1864 which recognized that reforestation, to improve streamflow, to restore the soil, and to regulate torrents was of public utility, and therefore that it was a duty of the government. Two methods were adopted to carry out the work. Government assistance for reforestation voluntarily undertaken by communities or private individuals; and compulsory reforestation by means of temporary dispossession, whereby the option was left with the owner of recovering his lands either by reimbursement of cost or by surrendering one-half the area to the government. The work was entrusted to the French Forest Service, and from 1861 to 1877, inclusive, an area of 233,590 acres of mountain land was put into forest or grass at a cost, including certain incidental expenses, of $2,900,000. At the close of the last century the fund appropriated by the French Government for protective afforestation amounted to $12,500,000 in round numbers, of which $4,900,000 went toward purchase of land and $7,600,000 was spent in improvement of streams and reforestation of their drainage basins. The work resulted in bringing under control a number of torrential streams and in reforesting about 425,000 acres of land, 58 per cent of which belonged to the government, 25 per cent to communities and 17 per cent to private individuals. France has now a far-reaching plan for bringing under control about 3,000 torrential streams in the Alps, Pyrenees, Ardenees, Cevenees and the central plateaus, at a cost of $40,000,000. Of this 35 per cent, or $14,000,000, is for reforestation alone.

In Austria, attention was attracted to reforestation of watersheds as a means of regulating stream flow by the great floods in the Tyrol and Kärnton. Austrian foresters enumerate over 500 torrents in the Tyrol, whose basins need reforesting, and on 100 streams the work has already begun. Similar work is being extensively carried on elsewhere among the Austrian Mountains.

In Italy the pressing need of reforesting land in the Apenines and the southern slopes of the Alps has long been urged upon the government by the people on account of the immense destruction wrought annually by the Po, which is now three times as destructive to land as it was in the past century. As a result of numerous petitions, a bill was passed in 1882, whereby waste land amounting to nearly a million acres was to be gradually reforested, involving an initial cost of $8.40 per acre beside current expenses.

The great efforts of nearly all the states of Europe to counteract the effects of indiscriminate forest clearing, efforts which involve an outlay of scores of millions of dollars, show how important the mountain forests are. They should be regarded as a sort of capital, whose function in the national economy is far higher than the income which the timber may yield.

Forests at high altitudes, at the sources of navigable streams, on shifting sands, on banks of large rivers, and on steep exposed slopes are recognized in most of the European countries as "protective forests," and are managed with the prime object of preventing washing and erosion of soil. Thus at high altitudes on steep, exposed slopes and near the timber line, clear cutting as a rule is forbidden and timber must always be cut either in narrow strips or by gradual thinning. Severe governmental regulations controlling the management of protective forests on private lands are common in Europe. There can be little doubt that similar action will be forced upon us in the United States by the results of destroying our mountain forests.

THE INLAND WATERWAYS OF GREAT BRITAIN AND THE PLANS UNDER CONSIDERATION FOR THEIR IMPROVEMENT

By Urquhart A. Forbes, Esq.,
London, England.

Extent of the British Inland Navigation System

The total extent of the waterways of Great Britain and Ireland, as stated in a Return of the Board of Trade, 1898, which is the latest official record on the subject, is 3,906 miles 69¼ chains, the mileage of those in England and Wales being returned as 3,167 miles 16¼ chains, that of those in Scotland 153 miles 21 chains, and that of those in Ireland 586 miles 32 chains. This estimate, however, can only be taken as approximately correct. It omits various waterways of which no official record has been preserved, such as Milford Haven, one of the finest harbors in the kingdom, which has between twenty and thirty miles of inland navigation; and it also differs considerably both from an earlier estimate of the board published in 1883 and from the estimates of various engineers who are recognized as authorities on the subject. The discrepancy between these various estimates appears to be mainly due to the omission from some of the waterways included in others and does not extend to mileage, and a comparison of their details with those given in the Board of Trade Return of 1898 shows that, after deducting 607 miles of waterway abandoned or converted into railway, the inland navigation system of the kingdom comprises about 3,793 miles in England and Wales, 341 in Scotland, and 629 in Ireland—a total of 4,764 miles. The estimates on which this conclusion is based are given in the subjoined table.[1]

---

[1] Of the following estimates, those of Mr. Conder, C.E., Mr. Taunton, C.E., and Mr. Lloyd, C.E., were prepared for the select committee on canals, 1883; that of Mr. Wells, C.E., for the Birmingham Conference, 1898, on Inland Navigation, organized by the Institution of Mining Engineers; and that of the late Mr. Vernon Harcourt, C.E., is contained in a paper on the subject read before the Society of Arts, 1899. To these might be added, did space permit, an estimate of the Irish waterway system contained in the report of a commission on the subject, of 1882, which gives the total extent as 708 miles, 20 chains:

Character and Development of the System

The bases of this system have in each of the three kingdoms been supplied by their numerous navigable rivers, which, owing to the neglected state of the roads after the decay of the old Roman highway system, formed the principal means of transport until the introduction of the turnpike roads. The tidal coast line of Great Britain is 3,900 miles in extent and greater than that of any other country in Europe, and, as has been pointed out by the late Mr. Vernon Harcourt, the tidal wave which traverses the British coasts places these rivers, which, owing to their small drainage areas, would otherwise be of no value for ocean navigation, on a par with the largest of those of other countries. The Thames, for instance, with a basin of 1-82 that of the Danube, affords superior facilities for navigation at high water between the sea and London to that of the Sulina mouth. The Mersey, with a basin only 1-722 that of the Mississippi, is as accessible at high tide up to Liverpool as the South Pass. The navigable channel of the Usk, the basin of which is only 1-888 that of the Volga, has nearly double the depth, at high water of fair neap tides, of the most favorable Volga outlet, and about three times the present available depth in that river from the Caspian Sea up to Astrakhan. The Ribble is of more use for navigation than the Rhone, though its basin is only 1-58 that of the latter river; and in earlier times this tidal wave penetrated much further inland and the navigation of the rivers flowing into the Wash was so good that as late as 1649 the now

	Board of Trade. Return 1883.	Mr. Couder. 1883.	Mr. Taunton. 1883 [England, Wales and Scotland only].
England and Wales	2688	4333 1878 Feeders.	2451 371 derelict.
Scotland..........	85	354	190
Ireland...........	256	755	
Total............	3029	7320	3012

	Mr. Lloyd. 1883 [England and Wales].	Mr. Wells. 1895 [England and Wales].	Mr. Vernon Harcourt. 1899.
England and Wales	3742 308 derelict.	3920 415 derelict.	3374
Scotland..........			120
Ireland...........			610
Total............	4050	4335	4106

To these estimates may be added that of Mr. Rudolph de Salis for England and Wales as given in Bradshaw's Canals and Navigable Rivers of England and Wales, where the mileage for those countries is given as 3,915 miles, 842 miles of which are tidal and 3,073 non-tidal.

insignificant port of Lynn supplied six counties wholly and three partially with imports from the continent.

Early Developments

During the seventeenth century this system of natural waterways was developed by a series of acts of Parliament empowering private individuals and bodies of individuals to improve the navigation of rivers and to make others not previously so, navigable. This movement was followed by the initiation by Brindley in 1795 of what may be termed the "canal era," during which all the navigable rivers of the kingdom were gradually connected with each other by means of a network of canals constructed by private enterprise in order to provide for the needs of different localities. In England and Wales the development of inland navigation, which began in 1423 with an act for removing obstructions in the Thames, may be said to have practically ended with the completion of the Manchester Ship Canal in 1894, and has thus extended over four and a half centuries. In Ireland it began only in 1715, with the improvement of the Maigue River, and ended with the completion of the Ballinamore Canal in 1859; and in Scotland it was limited to the eighty-eight years between the passing of the first Clyde improvement act in 1759, and the completion of the Caledonian Canal in 1847.

Varieties of Waterways

It has, however, proceeded on the same lines in each of the three kingdoms, the inland navigation systems of each of which include the three following varieties of waterway:

(1) Tidal navigable rivers, the soil of the bed of which is vested in the Crown for the benefit of the public, and on which all the subjects of the Crown enjoy the right of free navigation.

(2) Nontidal rivers which have been made navigable, and tidal rivers the navigation of which above the tideway has been improved under an act of Parliament, the ownership of the soil of which is, in both cases, for the purposes of navigation only, vested in commissioners or conservators appointed under the act who are entitled to demand tolls for the use of the river, which are devoted solely to the maintenance of the navigation.

(3) Canals constructed by private enterprise by companies

incorporated under special acts, who are the sole owners of their respective undertakings and are entitled to all the profits accruing from the tolls payable under these acts by the public for their use.

State Ownership and Control

In England and Wales state ownership of waterways is limited to the soil of the bed of tidal rivers, as above mentioned, and the state has never contributed in any way to the development of water conservancy. In both Scotland and Ireland, however, it has not only made large grants from the treasury for this purpose—the total expenditure on the Caledonian Canal in the former country, for instance, amounted to £1,280,000, and the grants for the Royal Canal of Ireland to £359,776—but is also the owner of the Caledonian Canal (constructed entirely by it) and the Crinan Canal in Scotland and of the Maigue, Boyne, Tyrone and Shannon River navigations in Ireland, where it also originally owned both the Grand and the Ulster Canals. The Board of Trade is the central authority for the control of inland navigation, and has the power of providing for the inspection of waterways, the condition of which is dangerous to the public, or liable to cause obstruction to traffic, and for their transfer to local authorities, or, if necessary, their abandonment. English canal companies are also required to send to the registrar of joint stock companies annual returns stating the address of the office and principal officers of the company; and the governing authorities of all waterways are under the obligation of furnishing the Board of Trade, when required to do so, with particulars respecting their works, capacity for traffic and capital, revenue, expenditure and profits.[2] The Caledonian and Crinan Canals in Scotland are controlled by commissioners appointed by the Crown, and those owned by the state in Ireland by the commissioners of public works in that country, and both of these bodies report annually to Parliament.

Conservancy Authorities

The governing bodies of the different waterways comprised in the British inland navigation system vary very greatly both in size and constitution, and in addition to the canal companies include bodies of conservators, commissioners, port and harbor authorities and municipal corporations. The conservancy authorities of a few of the more important rivers are of a representative character. The conservators of the River Thames, for instance, are thirty-eight in number and include representatives of the Admiralty and two other government departments, of the city and the county of London, of the London Water Board, and of the county or borough councils of the eleven counties traversed by the river. The thirty commissioners of the Severn represent the counties of Gloucestershire and Worcestershire, and the corporations of all the towns on the banks of the river from Bristol to Wenlock in Salop, while the tidal portions of both the Mersey and the Clyde are controlled by trusts on which the municipalities of Liverpool and Glasgow are largely represented, as well as the conservators of the navigation of those rivers.

---

[2] This power has been exercised by the board only twice since it was first conferred on it by the Railway and Canal Traffic Act, 1888.

Groups of Waterways in England

The waterways of England and Wales are divisible into six groups, one of which has its center in Birmingham, while the other five unite wholly or partially in the estuaries of the Humber, Mersey, Wash, Thames and Severn. The Thames and Severn are united by 648 miles of waterway; the Thames and Humber by 537 miles; the Severn and Mersey by 832 miles and the Mersey and Humber by 680 miles, while the ten waterways flowing into the Wash have an extent of 431 miles. London is connected with Liverpool by *three* through routes, with Hull by *two* and with the Severn ports by *four;* Liverpool with the Severn ports by *two*, with Hull by *three*, with the South Staffordshire mineral districts by *two;* and the last named districts with the Severn ports by *three* routes. Though, however, *nine* of these nineteen through routes terminate in the Severn ports and *nine* in London as against *ten* in Liverpool and five in Hull, the southern waterways are now of far less importance than those of the northern counties. No less than 23,500,000 tons of 37,426,886 which according to the Board of Trade returns, 1898, was the total traffic on English and Welsh waterways in that year, was concentrated round an area bounded by the Birmingham and Shropshire Union Canals, the Leeds and Liverpool Canal, the Aire and Calder Navigation, the Don Navigation, a line from Sheffield to Stoke, and the Trent and Mersey Navigation—a mining and manufacturing district, the waterways of which have a united length of only 642 miles. The traffic of the Birmingham canals amounts to 7,750,000 tons; that of *three* other systems of waterways within this area to between 2,000,000 and 3,000,000 tons; that of *three* to between 1,000,000 and 2,000,000 tons; and that of *seven* to between 500,000 and 1,000,000 tons. Only *three* waterways within this district have less than 100,000 tons traffic, but the Grand Junction Canal is the only waterway extending into the southern counties which has a traffic exceeding 1,000,000 tons, and only *three* (the Stafford and Worcester Canal, the River Lea and the Thames between Oxford and London) have a traffic exceeding 500,000 tons.

Scottish Waterways

In Scotland, though the Tay—navigable for 95 miles up to Perth for vessels of 200 tons—the Tweed and the Dee have been utilized for purposes of navigation, the Clyde and the Forth are the only two navigable rivers of importance. The country possesses only five canals, two of which, the Caledonian and the Crinan, though remarkable as engineering works, have proved of little value for purposes of trade, and in 1898, when the total traffic amounted to only 1,223,304 tons, the only waterways having a traffic exceeding 100,000 tons were the Forth and Clyde Navigation and the Edinburgh and Glasgow Union Canals. Scotland, however, possesses special advantages as regards inland navigation in the extent and number of its navigable lakes and in the fact that the firths of its two principal rivers—the Forth and the Clyde—are not separated by any range of hills and penetrate the plain between them on opposite sides, dividing the country, the breadth of which is there reduced to 50 miles, into halves.

Irish Waterways

Ireland, which, like Scotland, has numerous large navigable lakes, has an excellent system of waterways, which comprises both the longest river and one of the most extensive canals in the United Kingdom—the Shannon, 143 of the 256 miles of which are navigable, and the Grand Canal, which is 163 miles long and has ten branches. Owing, however, probably to the absence of manufacturing and mining industries in the country, the total traffic in 1898 amounted to only 708,174¼ tons, 309,288 tons of which was concentrated on the Grand Canal, which, with the Lagan Canal, with a traffic of 171,784 tons, are the only two on which the traffic exceeded 100,000 tons, while the Shannon, with 83,688 tons, was the only waterway on which it exceeded 50,000 tons.

Principal Rivers of the United Kingdom

The rivers of the United Kingdom with the greatest extent of navigation are the Thames, 215 miles long, which is navigable for 145 miles; the Severn, about two-thirds of the 200 miles of which are navigable; the Shannon, navigable for 143 miles out of its total length of 256 miles, and the River Forth, in Scotland, which, though only 72 miles long, is navigable for 50 miles. The short tidal navigations of the Tyne, Wear, Tees and Humber, on the east side of the Clyde, Mersey, Ribble and Bristol Avon on the west coast, though none of them much exceed 20 miles in length, are, however, of far greater importance for commercial purposes.

The Manchester Ship Canal

The most important of the British canals, both commercially and from an engineering point of view, is the Manchester Ship Canal, begun in 1885 and opened for traffic on May 21, 1895, on which £15,173,402 was expended—a total which included £1,786,313 paid for the Bridgwater Canal and £1,214,451 for compensation paid to various bodies possessing vested interests in the land it traverses. The canal, which is 35½ miles long and from which no less than 53,000,000 cubic yards of soil were excavated,[3] consists of three sections. The first of these runs from Eastham to Runcorn, near or through the Mersey estuary, a distance of 12¾ miles, and is provided with three tidal locks with chambers 600 feet by 80 feet, 350 feet by 50 feet, and 150 feet by 30 feet, with sills 28 feet, 25 feet and 16 feet, respectively, below the normal water level of the canal. The second section runs from Runcorn to Latchford, near Warrington, 8½ miles, where it is inland, but in which the level of the water as in the first section is raised by the tides; and the third from Latchford—where the locks stop the tidal action and the canal is fed by the Mersey and Irwell up to Manchester. One of the most notable features of the work is the swing aqueduct for the Bridgwater Canal, the first of its kind, by means of which, when closed, traffic can pass along the latter canal as heretofore, but which can be opened to allow of ships crossing it on the lower level of the ship canal. This aqueduct, constructed by Sir E. Leader Williams to replace that built by Brindley 136 years previously, was the first *fixed* aqueduct constructed in the United Kingdom. It may be added that the Manchester Ship Canal is the first large ship canal constructed with locks raising vessels 60½ feet and transporting them inland.

---

[3] Ninety-seven excavators, eight large bucket ladder dredgers and fifty-eight steam navvies were employed on the work besides some small dredgers.

The Caledonian Canal

Though it failed to realize the main objects for which it was constructed, the Caledonian Canal, having regard to the physical difficulties overcome in its construction and the period at which it was made, must be regarded as being scarcely less remarkable as an engineering feat than the Manchester Ship Canal. Its length is 60 miles, 37½ miles of which consist of four naturally navigable freshwater lochs connected by a series of canals 23 miles in length, and it extends diagonally across Scotland from Fort William on the Atlantic to Clachnaharry on the shore of Beauly Firth on the North Sea, and thus provides a means of enabling vessels to avoid the dangers and delays incident to the 500-mile voyage by the Orkneys and Cape Wrath. There are docks both at Corpach and Clachnaharry, the latter of which cover an area of 32 acres, and one of its most remarkable features is a series of eight connected locks, called by Telford "Neptune's Staircase," constructed to overcome the difficulty caused by the difference in the levels between Lochs Lochy and Eil, which, though the distance is only 18 miles, amounts to 90 feet. The canal is one of the finest monuments of Telford's genius, and is also notable as the only British waterway which has been constructed entirely at the cost of and has always remained under the control of the state.

The Grand Canal of Ireland

The total expenditure by the state on the Caledonian Canal was £1,300,000 and it also contributed £321,674 out of the £1,370,000 expended on the Grand Canal in Ireland, which is the most important waterway in that country, and though its total length of 163 miles is exceeded by that of the Shropshire Union, which is 200 miles long, it is, as has been said, the most extensive waterway in the United Kingdom. It extends southwards from Dublin to New Ross in Wesford and westward to the Shannon Harbor, where the trade boats of the company tranship into steamers plying northwards to Athlone and southwards to Limerick, while on the other side of the Shannon it runs to Ballinasloe and has no less than ten branches connecting it with the Liffey and various trading centers.

Other English Canals and Their Earnings

Among other English canals the next in length to the Shropshire Union are the Grand Junction, 188 miles long; the Birmingham canals, with a united length of 158 miles, and the Leeds and Liverpool Canal, 141 miles long. The Birmingham canals had, according to the Board of Trade returns, 1898, the highest net revenue earned by British canals in that year, £119,193, as against £103,663 earned by the Manchester Ship Canal; while the third waterway on the list was the Aire and Calder Navigation, which, though only 85 miles long, had a net revenue of £92,057, as against £50,642 earned by the Leeds and Liverpool, £48,840 earned by the Grand Junction, £23,613 by the Grand Canal, Ireland, and only £1,099 by the Shropshire Union. The Aire and Calder and the Weaver are the two most remunerative of the river navigations of the country, and over 1,000,000 tons of salt, besides a considerable trade with the potteries in coal, timber, cotton, flint and clay are annually carried over the latter river, which has been canalized for 50 miles between Northwich and Chester, and has four large locks 220 feet long by 42 feet 6 inches wide, and having 15 feet of water on the sills.

Financial Position of British Waterways and Its Causes

As will be evident from the above figures, a large portion of the inland navigation system of the United Kingdom, on which £14,000,000 had been expended up to 1830, has ceased to be remunerative. No less than 39 out of the 90 waterways of England and Wales were shown by the return of 1898 to be carried on at loss, and of the 126 waterways in the United Kingdom only *two* earned net incomes exceeding £100,000. Only *twelve* waterways earned incomes between £10,000 and £100,000, and only fourteen incomes between £1,000 and £10,000. Of the remainder only *eleven* earned incomes exceeding £500; and, though the impoverished condition of the canal companies and navigation authorities is partly due to the defective and obsolete construction of a majority of the waterways, the number of conflicting authorities by which they are governed and the keen competition between them, it is primarily attributable to the extensive control which the railway companies have acquired over the whole of the inland navigation system.

Railway Control

This control was first acquired by the railway companies at the time of the "railway mania" of 1845, when not only the public, on whose investments the canal companies depended for support, but also the companies themselves appear to have simultaneously concluded that water transport was about to be permanently superseded by the new invention. Though some of the canal companies were still paying dividends of 25, 26 and 30 per cent, many of them put pressure on the railway companies to purchase their undertakings, and by the end of 1846 the latter bodies had acquired possession of 944 miles of waterway; the ownership of nearly one-third of the waterways in England and Wales; one-fourth of those in Scotland, and more than one-sixth of those in Ireland is now divided between thirteen railway companies in England and Wales, two in Scotland, and one in Ireland. Where a railway company owns an entire canal it can regulate the traffic for the benefit of its railway, and where it owns only a portion of it, it can fetter the traffic on the other portions; and as almost every through water route has links in it under the control of a railway company, the railway companies, each of which exercises sole control over its own through route, are enabled to manipulate the traffic on the majority of waterways as they please. By charging excessive tolls, keeping their canals narrow, and making rules to fetter traders who attempt to convey their goods entirely by water, they have induced what the late Mr. Couder, R.E., termed a state of "creeping paralysis" among canal companies, the impoverished condition of which, in a majority of cases, renders it impossible for them to attempt the improvements necessary to enable them to compete with their wealthier rivals.

Defective Condition of Waterways

Owing to the neglect of inland navigation for over three-quarters of a century the greater number of canals still retain their original form of construction and are practically enlarged ditches, with a top water of about 30 feet and a bottom of 14 feet and with inclined slopes on either side—a form which produces a tendency to fill up at the bottom, with a consequent variation in the depth of the waterway in different canals, which is a serious impediment to traffic. In many cases both the locks and the canals themselves are too narrow to allow boats to pass each other properly, while throughout Great Britain, and especially in England and Wales, there are scarcely two canals that have a common gauge, and in some cases two or three different gauges of locks are to be found upon the same canal. Only 20 per cent of the independent waterways can admit craft that would enable them to realize the full value of economical transport. While there are 1,240 miles of canals designed for boats carrying cargoes of from 18 to 30 tons, and Calder and the Weaver, have been sufficiently enlarged and and 2,040 miles adapted for boats carrying cargoes of 40 to 60 tons, there are only 230 miles of waterways which, like the Aire, are improved to accommodate boats carrying from 90 to 350 tons. Some of the waterways under public trusts, and especially the more important rivers, such as the Thames, Severn, Lea, Clyde, Forth and Shannon, have been considerably improved, but the majority of these are much in the same position as those dependent upon private enterprise.

Defects of Organization and Competition

In addition to the two causes which have just been discussed, waterways have suffered from the want of enterprise and of the capacity for concerted action among canal companies, to which the railway companies largely owe their success, and from the number of conflicting authorities by which the majority of river navigations are governed. While the ownership of 22,455 miles of railway in the United Kingdom is shared between some thirty-eight companies, each of which governs its own through route, that of the 3,321 miles of waterway which remain independent of railway control is divided amongst more than double that number of canal companies and navigation trustees. Not one of the nineteen through routes by water in England and Wales has the advantage of being under a single body. There are, including the authorities of the navigable tideways such as the Mersey, Severn and Humber, *twenty-six* different bodies which compete with each other on the *three* through routes connecting London and Liverpool. There are *twenty-seven* on the four between London and Bristol, *ten* on the *three* between Birmingham and Bristol, and the same number on the *three* between Hull and Liverpool. The commissioners of the Severn control only 42 miles of its total length of 250 miles and the only conservancy authority on the Trent, which is 167 miles, exercises jurisdiction over only 73 miles; but the 57 miles of the Kennet and Avon are controlled by *four* different authorities, the 31 miles tidal portion of the Nen by *eight* public bodies, and the Witham, which is between 80 and 90 miles long, by *seventeen* different sets of commissioners. Water transport in the United Kingdom is, therefore, seriously impeded both by the defective administration arising from this multiplicity of authorities and also by the keen competition for traffic between the canal companies, which have hitherto entirely ignored the facilities offered to them under the Railway and Canal Traffic Act, 1888, for establishing a clearing system analogous to that which has so greatly benefited the British railway companies.

Revived Interest in Inland Navigation

The defective condition of British waterways has long been generally recognized, and during the last quarter of a century there has been a revival of public interest in the subject as well as in those of water supply, fishery and other kindred branches of water conservancy.

Inland navigation has been discussed from time to time by bodies like the Institution of Civil Engineers, the Society of Arts and the Associated Chambers of Commerce of the United Kingdom, and more especially at the meeting of the British Association at Dublin in 1878, and at conferences organized by the Society of Arts in London in 1888, and by the Institution of Mining Engineers at Birmingham in 1895. A very valuable paper, for which the Telford gold medal was awarded, was read before the Institution of Civil Engineers, in May, 1905, by M. J. A. Sauer, M. Inst. C. E., in which he advocated that main trunk canals should be constructed for conveying cargoes of not less than 250 to 300 tons at a time for the more important cross-country routes, with locks, 230 feet by 22 feet, with 6 feet 6 inches water on the sills, and vertical lifts 13 feet by 17 feet, with 6 feet 6 inches where required. "The Improvements required in Inland Navigation," also formed the subject of a paper, by Henry Rudolph de Salis, Asso. M. Inst. C. E., read at the general meeting at London of the Institution of Mining Engineers on June 15, 1907, in which the author, who has personally inspected the whole of the inland navigations of England and Wales, urged that the primary essentials for their improvement are the selection of such as are likely to repay development, and the reorganization of the authorities controlling them. Various "canal projects," none of which, however, have yet been adopted, have been from time to time placed before the public—such as the construction of a national canal capable of accommodating steam barges to connect the Thames and the Mersey;[4] ship canals, connecting Goole and Sheffield, and between the Mersey and Birmingham;[5] a canal connecting Birmingham with the Trent and the North Sea; and an improved waterway between the Midlands and the Thames. The revived interest in waterways has also borne practical fruit in the construction of the Manchester Ship Canal, the most important event in the history of British waterways since the opening of the Bridgwater Canal—the success of which has itself tended to encourage canal enterprise. It has been evidenced by the amalgamation, in 1894, of the Berkley Ship Canal and three other inland canals[6] under the Sharpness New Rocks and Gloucester and Birmingham Navigation Company, and by a similar amalgamation in Ireland of the Ulster, Coal Island and Lagan canals[7] under the Lagan Navigation Company. Its influence may also be traced in the purchase, about the same time, of the Grand Union of Leicester and the Northants Union canals by the Grand Junction Canal Company, and by the acquisition by that canal, by arrangement of tolls between Birmingham and London, and in the purchase, in 1895, by the Sheffield and South Yorkshire Navigation Company from the Manchester and Sheffield Railway Company.

---

[4] Advocated by Mr. S. Lloyd, C.E., in a pamphlet published in 1885.

[5] Connecting with the Manchester Ship Canal and the Mersey by way of the Weaver.

[6] The Worcester and Birmingham, Droitwich Junction, and Droitwich Canals.

of the Don Navigation, which connects Sheffield, Rotherham, Barnsley and Doncaster with the Trent at Keadby and the Ouse at Goole. In addition to this, public interest in the question has been shown by the passing, as early as 1882, of a resolution at the annual meeting of the Associated Chambers of Commerce advocating the entire emancipation of canals from the control of railway companies, and during recent years by a series of such resolutions passed both by individual chambers and by the Associated Chambers of Commerce of the United Kingdom in favor of the nationalization of waterways.

Associated Chambers of Commerce and Nationalization of Waterways

The most important resolution on the latter subject was one passed at the annual meeting of the Associated Chambers at Manchester on December 4, 1904, that:—"in view of the urgent necessity of cheapening the cost of the internal transit of goods," and of the benefit to the community that must accrue from the development of inland navigation, "this association, being of opinion that the best results can only be obtained through unity of management, strongly urges that the waterways of the United Kingdom should be acquired by the state or by a suitably constituted national trust." This resolution, which was submitted by the Liverpool and Manchester chambers—both of which had in 1882 declined to sign the resolution in favor of emancipating canals from railway control—was subsequently modified by the addition that there should be a "government guarantee, supervision and control of any national trust constituted for the purpose, and in this form was supported by sixty-one and opposed by forty of the Chambers represented, but was rendered ineffective by the fact that a two-thirds majority had not been obtained in its favor. As, however, the association had similarly advocated the compulsory purchase of canals by the government at five of its meetings, and resolutions to this effect have been since 1904 passed by various provincial chambers and discussed by the London Chamber of Commerce, it is evident that there is a substantial body of public opinion in favor of the suggestion.

The Canal Trusts Bill, 1905

The principle of the second portion of the Manchester resolution was subsequently embodied in the Canal Trusts Bill, 1905, which was introduced into Parliament by Mr. Rowland H. Bowan, the Liberal member for North Leeds, for the establishment of a canal trust "to acquire, develop, and extend and administer in the public interest canals and navigations in England and Wales. This measure, which was supported by thirteen members, belonging to the three political parties in the House of Commons and representing constituencies in the northern and midland counties, Scotland and Ireland, proposed to incorporate a body of twenty-nine trustees, twenty-one of whom were to be appointed by the treasury and other government departments, and the remaining eight by various port authorities, Chambers of Commerce and other kindred associations. This body was to be empowered to purchase the Birmingham and twelve other canals and two river navigations for the purpose of organizing a through system of communication between London, Liverpool, Hull and Bristol, and also subsequently to acquire other canals and navigations by agreement or by a provisional order from the Board of Trade. Owing, however, to the neglect of its promoters to comply with the regulation requiring bills of this description to be advertised in the London *Gazette* this measure had to be withdrawn before Parliament had had the opportunity of pronouncing an opinion upon it.

The Respective Merits of "Nationalization" and "Canal Trusts"

"Nationalization" and "Canal Trusts" may be said to be the only two schemes for the improvement of British waterways which at present find favor with the public. The first, though theoretically attractive, is open to the objections that it is likely to be opposed by the more prosperous canal companies, and, which is more important, that Parliament is not likely to be favorably disposed to a plan entailing a very heavy expenditure for the acquisition of waterways, the capacity of which for yielding a revenue sufficient for their upkeep is, to say the least, extremely problematical. Canal trusts are also, no doubt, likely to be opposed on the grounds that they interfere with the rights of private enterprise and necessitate the grant of public money for an uncertain object; but they have the merits of providing for the transfer of the control of our waterways from a number of competing bodies to a representative central authority, and of being organizations capable of tentative introduction and gradual extension.

Extension of the Powers of the Board of Trade

In default of the adoption of either of these schemes, much might be effected in the improvement of British inland navigation by an extension of the supervisory powers of the Board of Trade, which is the central authority for waterways, if canal companies and navigation authorities would adopt the principle of cooperation in lieu of that of competition, and like the railway companies, endeavor to fit their respective undertakings for through traffic by the establishment of a minimum gauge for waterways and locks and of standard traffic rates. It must, however, be added that, as has been pointed out by the present writer and his coauthor Mr. Ashford in their recently published work on British waterways,[7] the question of the improvement of inland navigation is intimately bound up with that of water supply. Canal companies and water companies now compete with each other for sources of supply, and it has been recently demonstrated both by the Salmon Fisheries Commission, 1902, and the Sewage Disposal Commission, 1898, in their third report, issued in 1903, that the indiscriminate selection of their sources of water supply by companies and municipalities and the reckless waste of water through mining operations have seriously diminished the volume of rivers and dried up many of the springs and wells which furnish rural water supply and feed canals. The two above commissions have agreed in recommending the establishment of a central water authority for dealing with this question, as well as for controlling fisheries and checking pollution, and it is one which cannot safely be neglected in any scheme which would tend to increase the demands upon the national sources of supply in order to extend the inland navigation system. All these points have doubtless been fully considered by the Royal Commission on Canals, which is now sitting, and the report of which is expected shortly to be issued. The appointment of that body is itself the most recent and also one of the most important evidences of the revival of public interest in British waterways, and until its recommendations have been made public all plans for their improvement must be regarded as purely speculative. It will be evident from the foregoing necessarily imperfect sketch of some of the main features of the inland navigation system of the United Kingdom that it at all events possesses possibilities sufficient to render such an improvement eminently desirable.

---

[7] Our Waterways, by Urquhart A. Forbes and W. H. R. Ashford. London: John Murray, 1906.

LIST OF AUTHORITIES.

Stevenson, David. *Principles and Practice of River Engineering*, 2d ed. 1872.
Mann, S. J., M.I.C.E. *River Bars.* 1881.
Lloyd, Samuel, M.I.C.E. *England Needs Steam Navigation.* 1885.
Jeans, Stephen, M.I.C.E. *Waterways and Water Transport.* 1890.
Wheeler, W. H., M.I.C.E. *Tidal Rivers: Their Hydraulics, Improvement and Navigation.* 1893.
Harcourt, L. F. Vernon, M.I.C.E. *Rivers and Canals*, 2d ed. 1896.
De Salis, H. Rudolph. *A Chronology of Inland Navigation.* 1897.
Thompson, W. Gordon. *The Canal System of England.*
Coulson, H. J. W., Forbes, U. A. *The Law of Waters: Sea, Tidal and Inland.* 2nd ed. 1902.
De Salis, H. Rudolph. Bradshaw's Canals and Navigable Rivers of England and Wales. 1904.
Forbes, Urquhart A., and Ashford, W. H. R. *Our Waterways.* 1906.
Report of the House of Lords Committee on Conservancy Boards. 1877.
Report of the House of Lords Committee on Thames Floods Prevention. 1877.
Report of the Thames Traffic Committee. 1879.
Report of the Commissioners appointed to inquire respecting the system of navigation which connects Coleraine, Belfast and Limerick. 1882.
The Board of Trade—Returns made to, in pursuance of section 39, sub-section 2, of the Railway and Canal Traffic Act, 1888, in respect of the Canals and Navigations in the United Kingdom for 1898.
The Board of Trade—Reports made to, under section 41 of the Railway and Canal Traffic Act, 1888, in respect of the River Ouse navigation, the Kennet and Avon Canal navigation, and the London and Hampshire Canal, 1891.
Department of Agriculture and Technical Instruction, Ireland—Banking, Railway and Canal Statistics. 1901.
Report of the Royal Commissioners appointed in 1900 on Salmon Fisheries. 1902.
Third Report of the Royal Commission appointed in 1898 on Sewage Disposal. 1903.
Ninety-ninth Report of the Commissioners of the Caledonian Canal. 1904.

Society of Arts. Notes on Previous Inquiries in Connection with the Proceedings of the Congress on National Water Supply, Sewage and Health. 1878.

Society of Arts. Annual Conference on National Water Supply, Sewage and Health. 1879.

Institution of Civil Engineers. Proceedings. 1848. *et seq.*

Society of Arts. Report of the Conference on Canals and Inland Navigation. London, 1888.

Institution of Mining Engineers. Report of the Conference on Inland Navigation. Birmingham. 1895.

Waterways in Great Britain. By J. A. Sauer. Minutes and Proceedings of the Institution of Civil Engineers. 1905, Vol. CLXIII, p. 21. *et seq.*

Improvements Required in Inland Navigation. Paper read before the Institution of Mining Engineers, June 13, 1907.

Rees Encyclopædia. 1819.

Encyclopædia Britannica.

Smiles, Samuel, LL.D. *Lives of the Engineers.* 1861.

THE PRESENT SIGNIFICANCE OF GERMAN INLAND WATERWAYS[1]

By Professor Walther Lotz,
University of Munich, Germany.

A clear comprehension of the present importance of inland waterways is only possible when the different kinds are clearly distinguished from one another. In the following pages the service intended for sea-going ships including waterways for joining the two seas, such as the Suez Canal and the North Sea Canal, will not be considered. The lower courses of large rivers made navigable for ocean steamers, such as the Elbe from Hamburg down, and the Weser from Bremen to the sea, will not be treated, as is also the case with entirely artificial canals which make inland towns accessible to ocean ships, such as the Manchester Ship Canal. That these artificial and improved shipping routes can compete in the age of railroads and play an important economic part if technical conditions are favorable, is at the present time beyond dispute.

In this paper only those inland waterways are considered which are navigable by river boats and not primarily for sea-going steamships. At present the two kinds of inland waterways are gradually blending. For instance, the Rhine from Cologne down is available primarily for river boats, and for that reason it is here included, although smaller sea-going vessels run from Cologne to England, and likewise to Hamburg, Bremen and the Baltic ports. Waterways primarily adapted for rafting timber and suitable only in a small degree for boat traffic are not considered in this article.

Most inland waterways which are used entirely or mainly by river boats are divided into two classes: natural and artificial.

---

[1] This study is an adaptation and translation of the fifth chapter of "Verkehrsentwickelung in Deutschland, 1800-1900," and is here reproduced by permission of the author, and the publisher, B. G. Teubner, Leipzig, 1906.

The natural include inland lakes like Lake of Constance and the great North American lakes, also rivers even when "regulated" by shortening the windings, dredging the channels to uniform depths, narrowing the banks, and by other constructions at large expense for the benefit of navigation or the adjacent lands. As artificial are considered those waterways that carry traffic over watersheds to connect different natural routes, such as the Ludwigs-Donau-Main-Canal, and the Erie Canal connecting the Hudson River and the Great Lakes; and paralleling canals dug along the course of a river not suitable for traffic to obtain a navigable waterway, as for example, many of the French canals and parts of the German Dortmund-Ems Canal. It may be questioned whether canalized rivers, that are made navigable through dams, are to be classified as natural or artificial. To this division belongs the Main between Offenbach and Mainz.

Inland Waterways at the Advent of the Railroads

The general opinion between 1840 and 1870 was strongly against the ability of inland waterways to carry traffic in competition with the railroads. Let us consider the conditions at the time of the introduction of the railroad. France, the Netherlands, Sweden and upper Italy were already served by a passable net-work of navigable channels; England and the United States had recently sought to construct what these other countries had before provided. It soon became the common belief, especially in England and America, that canals of the old type were less capable of carrying the traffic than the railroads. This unfavorable opinion gradually changed after 1875 in favor of the inland waterways. Such was the case, especially in Germany, where a notable development in traffic capacity of the inland waterways occurred in the period 1875-1905. However, by no means, were all interests glad to see the revival of inland water transportation facilities. The warmest advocates of the new development were those who were dissatisfied with the results of the control of the railroads by the state. Legislative control of tariffs, which had been hoped for at the time the railroads were taken over, has not been realized. The natural monopoly present in the railroad system has been managed by the administration to the best of its knowledge and understanding, but in spite of this it cannot be denied that in Prussia large profits have been sought, while in Germany as a whole, since 1879, so far as the fiscal point of view has not ruled, the management has been used to favor the export of certain wares and to hinder that of others in furthering the protective tariff policy.

Many of those who were not satisfied with the official administration of the railroad monopoly, including those opposed to the commercial policy followed since 1879, and also many of its adherents, were glad to find in inland navigation a means of moving freight which was independent of the railroad administration. Those who have given a non-partisan attention to the development and traffic-carrying ability of the waterways have been forced, especially in view of the accomplishments between 1875 and 1905, to admit the increased importance of this means of transportation.

Causes of Growth of Water Transportation

On what causes does this advance depend? One important reason for the development of inland water transportation in the second half of the nineteenth century is the freedom from tolls of navigation on natural waterways. River transportation has increased in proportion with the success of the continual movement carried on between 1815-1870 for the elimination of the mediæval tolls on the rivers. Traffic was hindered and made more expensive through centuries by these tolls in return for which no important improvements in the navigability of the rivers were made up to 1800. These hindrances to the natural development of traffic on the more important German rivers were broken down by interstate agreements. The prejudices of the German people against navigation tolls were so great that they finally found expression in a rather radical form in the imperial constitution. It is true the statement is not so clear in form as might have been wished, so that to-day doubts may be expressed as to the meaning of the various clauses.

Article 54, section four, of the German Imperial Constitution reads: "Taxes may be levied on boats on natural waterways only for the use of special facilities intended for aiding traffic. These tolls, as also those for the passage of such artificial waterways as are the property of the state, may not exceed the amount necessary to meet the costs of administration, and maintenance of the facilities where they are levied. These conditions also apply to all floating timber traffic so far as such traffic is upon the navigable waterways."

The meaning of these clauses is by no means beyond dispute. It is clear that the payment of the interest on the outlay for natural and artificial waterways was not expressly designated. Unfortunately, however, it is not stated how the tolls for meeting the costs of the improvements are to be determined, nor what is to be considered a natural and an artificial waterway. It remains uncertain whether canalized rivers belong to artificial waterways as concerns the levying of tolls. It is fairly clear that rivers not canalized by the use of dams but "regulated," and upon which large sums have been spent for the improvement of navigation are to be considered as natural waterways by these clauses of the Imperial Constitution.

The second cause of the advance of inland water transportation in Germany is a technical one. Inland navigation has received a great advantage in competition with the railroads through improvements in the control of streams, in the building of canals, in boat building, and in the methods of handling traffic. First of all, great advances have been made in rendering rivers navigable. In the first half of the nineteenth century experience proved the practicability of maintaining a minimum depth of water in rivers otherwise not navigable by means of the movable dam.[2] For the "regulation" of rivers, in which great technical advance is being made, and for the canalization of rivers increasing appropriations are being made from public funds.

One conclusion in regard to the building of artificial waterways has become apparent since 1870, viz., a canal on which only small boats drawn by horses can be moved is capable of competition with the railroads only under very exceptional conditions. The fixed costs of such a canal can, under present conditions, seldom be

[2] These are dams regulating the retention and flow of water according to the local needs. Single sections may be taken out of the dam or replaced. The dam can be made complete by the insertion of all sections or entirely removed by taking out the various sections. Such dams work perfectly on the canalized section of the Main between Frankfort and Mainz.

covered by the income from the usual canal tolls or by increased ability of the surrounding district to pay higher rates. On the other hand canals upon which heavy shipping is possible in boats of 450 to 600 tons capacity, and upon which mechanical power can be introduced for the movement of boats, do not fall under this unfavorable criticism, even in this age of railroads. It is of great importance that heavy traffic should be possible and that rapid forwarding should not be interfered with through many small locks.

Where difficulties of elevation are to be overcome, the new development in canal technique aims to overcome the differences as much as possible by a single lifting instead of through several small locks—the so-called flights of locks. The technical advances of the present day make it possible to overcome at one time by means of chamber locks differences in height of ten meters.

Another means in use at the present time to overcome the great difficulties of lockage is the use of a contrivance to raise ships floating in a chamber filled with water. This elevator method is used in the Dortmund Ems Canal in Henrichenburg, but the newer plan to raise ships on an inclined plane has proved successful as yet only for small boats. Its adaptability for use in heavy traffic is still a matter of dispute.[3]

An important improvement in river and canal transportation in the nineteenth century has come through increase in the size of the boats. The largest boat on the Rhine at the present time has a tonnage capacity above 2,600. In 1902 began the building of iron sailing and tow boats for the Rhine with a capacity of more than 650 tons. The average capacity of the sail and tow boats rose from 182 tons in 1884 to 340 tons in 1902.[4] A Rhine boat of 1,500 tons capacity can carry as much as 150 railroad cars of ten tons burden. It replaces several freight trains, and while in the last half of the nineteenth century the Ludwigs-Donan-Main Canal was built for ships with a capacity of 127 tons, the present projects for canal building provide a waterway to accommodate boats of 600 tons burden.

---

[3] At Elbing on the Overland Canal, boats of fifty tons capacity are carried on cars, overcoming a fall of twenty-five meters. This is not possible for boats of 600 tons.

[4] See Volume 102 of the publications of the Verein für Sozialpolitik, pp. 89-90.

Great improvements have also been made in the nineteenth century in the traction of boats on inland waterways. Besides the improvements offered by the use of chains for ascending certain rivers, the most important advance has been in the adaptation of steam power.[5] At the present time attempts are being made to adapt electricity to the propelling of boats on inland waterways, and the development of methods of mechanical towage on canals by electrical locomotives, etc., is being actively pushed.

Comparison of Present Rail and Water Traffic

At the present time inland water transportation, even in competition with the railroads, shows a much healthier development than was shown in 1800 in the competition with ordinary roads. This is true with a single qualification. The increase of inland navigation occurs primarily where heavy traffic with the adaptation of mechanical methods of towing or propulsion is possible.

The following remarkable figures showing the advance of German inland water navigation are taken from the work of Geh. Rat Sympher. These statistics give a comparison of the development of traffic on the railroads and inland waterways of Germany since 1875. The incompleteness of official statistics of inland water traffic necessitates estimates for the ton kilometer traffic passing on inland waterways, but these estimates have been made with care.[6] Of course errors are not impossible wherever estimates are relied upon. The statistics in regard to railroads, however, are more reliable. It is further to be noted that there are included 10,000 kilometers of navigable inland waterways in 1875 as well as in 1905; and in 1905 the unimportant navigable sections of the waterways are not included. In this way the showing for the traffic on the waterways in 1905 is more favorable than would have been the case had those portions carrying very little traffic been included in the average. The following figures are offered with these explanations:

---

[5] The use of steamboats on canals is a much more difficult problem than upon rivers. Screw propellers and sidewheelers damage the canal banks, while no such disadvantages attend their use on rivers.

[6] See as to the method used for the estimates, Zeitschrift für Bauwesen, 1891, p. 45.

German Navigable Waterways, not including River Mouths Navigable by Sea-Going Ships.

	1875.	*1905.*
Length	10,000 km.	10,000 km.
Arrived, tons	11,000,000	56,400,000
Departed, tons	9,800,000	47,000,000
Net ton kilometers[7]	2,900,000,000	15,000,000,000
Kilometric traffic[8]	290,000	1,500,000
Average distance transported	280 km.	290 km.

German Railroads

	1875	*1905*
Length	26,500 km.	54,400 km.
Ton kilometers	10,900,000,000	44,600,000,000
Kilometric traffic	410,000	820,000
Average distance transported	125 km.	151 km.
Per cent of total traffic:		
Inland waterways	21%	25%
Railroads	79%	75%
	100%	100%

If it be correct to assume that the length of the navigable waterways remains the same in 1905 as it was in 1875—ten thousand kilometers—the part of waterway traffic in the total traffic (24 as compared with 21 per cent) has increased more than the per cent of the rail tonnage, although the railways rose from 26,500 to 54,400 kilometers in length.[9]

---

[7] There are three ways in which the statistics of traffic may be presented: The first possibility is to ask how many tons have passed on a certain route. The second, to consider the weight and distance carried, thus arriving at a ton kilometer basis, viz., determining how often one ton has been moved one kilometer on a route. The third possibility is to determine the kilometric traffic. The whole number of kilometric tons is divided by the length of the route, and it is found what part of the entire traffic carried falls upon the average kilometer. This is the best method of comparison where we are interested in what the waterway and railroads actually accomplish for traffic. The above figures from Sympher are to be found in the Zeitschrift für Binnenschiffahrt, 1907, p. 496, *et seq.*

[8] In reckoning average distance transported it is sought to answer the following question: How many kilometers on the average does a ton of freight, once delivered to the waterway or railroad, travel before it reaches its destination?

[9] If the length of German waterways in 1900 be taken as the same as in 1875, their character was markedly improved. Major Kurs, however, reckons the length of the navigable canals and rivers in Germany in 1891 as greater than that given by Sympher, namely 12,223.02 kilometers. Including the navigable inland seas and harbors, etc., Major Kurs counts 14,939.37 kilometers in Germany. See page 10 of the Tabulated Report Concerning the Navigable Waterways and the Waterways for Rafting Timber in the German Empire. (Major Kurs, Berlin, 1894.)

Kilometric traffic was, if Sympher's estimates are to be trusted, much smaller by water in 1875 than upon the railroads. In 1905 the average traffic on railroads had risen greatly, but that upon the waterways had increased even more so that it (1,500,000 ton kilometers) exceeded the kilometric traffic of the railroads (820,000 ton kilometers). The kilometric traffic of the German waterways at the present time is greater than that upon the French waterways.[10]

These figures are indeed remarkable. However, a warning must be given that careless conclusions must not be drawn from these estimates. In the first place, in the statistics presented, only a part of the traffic carried by the railroad is compared with practically the total of that by waterways. Passenger traffic, which plays a large part in the case of the railroads, plays a very unimportant one on the water routes; but even in the case of freight traffic we must be careful not to overestimate the importance of these figures however great that may be. Though the average carriage in Germany per kilometer on the waterways in 1900 was greater than on the railroads, nevertheless we must not conclude that more freight was actually forwarded on these routes. That is not the case. The total amount of freight forwarded is in fact very much less on waterways than on the railroads.

If a fourth of the total traffic in ton kilometers is carried on the inland waterways and three-fourths on the railroads, this does not mean that one-fourth of the freight went on the waterways instead of on the railroads. About 16.2 per cent of all freight arrivals used waterways; but the once-loaded freight used the waterways on an average of 290 kilometers, and, in the case of the railroad, only 151 kilometers; therefore, in waterway traffic the figures for ton kilometers become especially large.

The distance from the shipping point to the destination does not always indicate the actual service rendered by water. Roundabout routes are necessitated by the course of the streams. Besides that, the cheapnesss of the waterway oftentimes justifies a great diversion from the direct route; thus greatly increasing the kilometer tons but not equaling the higher charges levied by the railroads. A remarkable example of this may be cited. In 1891 a large quantity of soda was to be sent from the Würtemberg town of Heilbron to Tetschen in Bohemia. The railroad route was evidently the shortest but the soda was not sent thus, but was sent down the Neckar, then laden into a Rhine boat, again transshipped at Rotterdam and brought to Hamburg, where, after another reloading, it was taken up the Elbe to Tetschen. In spite of all this the freight charges were cheaper than upon the railroad. Further, the development of inland water traffic in Germany in the period 1875-1905 must not be believed to be the same on all routes. The greater proportion of the total inland water traffic in 1905 took place upon the Rhine and Elbe which carried 66.9 per cent of the entire amount. Great advances have been made upon the Oder and Weser, and also to a lesser degree on the Donau. Besides these instances the only advances made were upon those few canals and canalized routes which by 1905 had been made accessible for larger boats. On those waterways where no adaptation to present-day needs has been made a falling off in traffic is shown, even in this late period.

---

[10] The kilometric traffic on the French inland waterways is given by Sympher for 1905 as 411,000, as compared to 182,000 in 1875.

In comparison to railroad lines traversing the same territory, river navigation is able to compete best where transportation of heavy articles of low value not requiring great speed is demanded. Besides this it happens also that non-perishable articles of high value seek the waterways whenever the railroads for any reason demand high freight rates. This happens not only in the case of grain but for a large number of other articles, not included in the cheap special tariffs Nos. 2 and 3.

The Question of Tolls on the Waterways

The requirements in the Imperial Constitution on the levying of tolls on the waterways have already been presented. It remains to review the actual administration of these provisions and to describe the movement in favor of a change therein. At the present time, in practice, navigation on the open streams, with a few exceptions, is free, while the use of harbors and unloading facilities is often conditioned upon the payment of tolls. On the more important streams the freedom from taxes for the bare use of the waterways is guaranteed not only by the Imperial Constitution but by interstate agreements. On the other hand, the Prussian government levies important tolls on the canalized rivers when opportunity offers, as, for example, on the canals of the lower Main and on the Fulda between Kassel and Münden, on the upper Oder, etc. Navigation taxes are regularly levied in Germany on the canals even for bare passage. It often happens that navigable waterways not suitable for heavy traffic, such as the Ludwigs-Donau-Main Canal, at the present time, do not pay the cost of maintenance, in spite of high tolls, since the traffic is too small. This is not always the case, however, even on the smaller canals. The waterways near Berlin, although not satisfying in all particulars the demands of present-day heavy traffic, are in much more favorable condition due to the lively business carried on upon them.

The Prussian Minister of Finance reported to the Landtag as follows: "The Finow Canal brings in an income of ten million marks, though it certainly has cost us less than two million marks. The other waterways near Berlin also bring us in a good surplus."[11]

The expenses for inland waterways in Prussia for the period 1881-1897 are given as 398,781,000 marks. Of this amount one-third was for current expenses, maintenance, administration and collection of tolls, and two-thirds for repairs, betterments and extensions. Of the total expenditures between 1891 and 1897, one hundred and forty-nine million marks were upon rivers, and 57,000,000 on the canals.[12] It is disputed whether the expenditures on waterways should be recovered by taxes upon the traffic passing over them, as in the case of railroads. It is urged, on the one side, that the costs must be covered by tolls on shipping, as otherwise one district gets a special advantage from appropriations of state funds. It is argued also that the improvement of the waterways can be carried on only when an income from shipping is secured. Taxes, in return for which something is given, are not to be compared to the old river tolls for which little or nothing was accomplished for traffic. Finally, there are strong advocates for the levying of tolls on inland water transportation (by amendments to the constitution, and the interstate agreements), in order that the Prussian railroads may not suffer an unwelcome competition which partly nullifies the tariff policy favored by those administering them. For the other side it is argued that waterways, like the highways on land, should be kept tax free, so that it may be possible to have free traffic by various competing lines. The expenses for improvements may well be covered through increased ability to bear taxation in the districts of land improved by them. Furthermore, the railroad is not an end in itself. When the railroads were taken over by the state it was not the intent to seek after the highest profits possible and to crush every competition that should lessen such profits. Waterways stimulate new branches of traffic, and the railroad traffic itself increases where there is a waterway capable of supplying the needs of commerce. Finally, it is not technically possible to divide the expenses of river improvements between the shipping interests and those of the neighboring districts of land.

---

[11] See Schwabe, p. 75. Up to the present time the Finow Canal is available only for boats of 150 to 170 tons burden. Schwabe, p. 130; also Peters, "The Financial Development of the Prussian Waterways." (Archiv für Eisenbahnwesen, 1902, p. 749.)

[12] See Schwabe, p. 125.

My personal belief is that to introduce tolls upon the Rhine and Elbe navigation would be a great step backward for Germany. It is more than apparent that taxes upon river traffic in the end result in a raising of freight rates. To introduce consciously such a thing in the presence of the competition ruling in the world to-day, would be a decided step backward in our policy. Its harm would not be confined to those producing and consuming districts near the waterways.

Inland navigation facilities increase the prosperity of our sea trade. Harbors which lack inland waterways traffic command a too narrow *Hinterland* for a large foreign trade, no matter how well developed may be their railway net. The French to-day point to the prosperity of Antwerp, Rotterdam and Hamburg, and argue that they who wish a great sea trade must supplement their other facilities with a suitable inland waterways system. It is not intended to argue that tolls on canals or to cover the expenditures for large improvements on canalized rivers are objectionable in every case. Improvements that bring important traffic economies may be paid for by a reasonable tax, and within the bounds provided by the Imperial Constitution. For building canals, for the cost of which no tolls are to be levied, funds cannot be gotten from the governments and legislatures without great difficulty. In less degree the same is true of the expensive canalization of river courses.

To sum up, even in countries owning the railroads, so long as it is impossible through legislative regulation of the tariff to control the actual management of the railroad monopoly, the possibility is at hand that the railroad policy may overlook and harm important national interests. The significance of inland waterways, over which no tariff policy can acquire easy control, lies at present chiefly in the fact that they make possible free competition against the railroad monopoly. They can sooner force the railroads, through competition, to give better rates than can be the case through other methods of procedure. Nationalized railroads may be managed to favor protective tariff policies. Freedom of traffic upon waterways prevents such a development.

The advantages of inland waterways are:

1. They can carry bulk freight of non-perishable variety long distances by water cheaper than these commodities can be forwarded by railroad.

2. Traffic facilities are here offered which are independent of any economic policy favored by the management of the railroads. All freight may be carried with charges dependent solely upon the actual cost of the service.

This estimation of the importance of inland waterways at the present time does not lead to the conclusion that all projects for canals which are presented, whether technically or financially sound or not, should be favored; but, on the other hand, this investigation proves that a plan for improving inland waterways, technically and financially sound, should not be opposed merely because of the fear of the competition such facilities would bring to the traffic on other transportation means. Never in history have the agriculture and industry of a people declined because good methods of transportation were furnished through the country, but the downfall of many peoples, not only in trade and industry, but also in agriculture, has come when they neglected to maintain the great lines of communication used by international commerce.

The Prussian Law of April 1, 1905, for the Maintenance and Extension of Waterways

After the first plan of the Prussian government for joining the Rhine and the Elbe by an inland canal had been frustrated by the Prussian Landtag, a new proposition was finally passed as a compromise on the first of April, 1905. By this law 334,575,000 marks are granted to build a canal from the Rhine to Hanover and Linden. Various enlargements are provided including a deep waterway from Berlin to Stettin and other improvements, chiefly connected with the Oder. There is a provision that the users of the canal shall pay tolls and that the provinces and other public organizations through which the canals pass, such as Bremen, shall contribute to the interest and sinking fund on the capital raised for the projects in so far as these charges may not be met through the tolls on shipping.

A rather broad right of expropriation is reserved to the state. A waterways council is to be created from representatives of the government, of other organizations involved, and of the provinces guaranteeing for interest. Besides the decision to substitute for the Rhine and Elbe Canal a system reaching from the Rhine to the Weser and Hannover, the law introduced two other important modifications.

Paragraph eighteen reads: "Only the towage provided by the government can be used on the canals from the Rhine to the Weser and the branch to Hannover, and on the branch canals of those waterways. The establishment of mechanical towage on these routes is forbidden to private individuals. The movement of ships with their own propelling force over these routes is to be permitted only under a special license. Further provisions concerning the towing monopoly and the furnishing of the necessary capital are to be provided by a special law."

Paragraph nineteen reads: "Shipping tolls are to be levied on the rivers 'regulated' in the interests of navigation. These tolls are to be so adjusted that their yield shall make possible a reasonable interest payment and sinking fund on the capital which the state shall raise for the bettering or deepening of each of those rivers, in the interest of navigation, above their natural depths."

It remains to be seen whether, at the completion of this canal, its extension to the Elbe will be provided for; whether the interstate treaties and provisions of the constitution which have forbidden thus far the raising of tolls on navigation on free streams will be changed; whether, finally, the state towing monopoly on the Rhine and Hanover Canal will actually be established. If the intentions of the legislators of 1905 are realized in these particulars, it is evident that a development of freight traffic which will counteract the Prussian railroad tariff policy will be impossible on the inland waterways. If the railroad tariff policy remains protective and friendly to the syndicates, it will, under the above conditions, find no true correction through the operation of the canals. Likewise, the inland waterway system will gradually cease to be a competitor against the railroad monopoly through the fact that the same interests which control the latter in favor of the protective tariff will dominate the former also for the same end.

Apropos of this estimate of the canal law the table on page 260 is significant.

It is further to be noticed that carrying through this plan that each river should bear the cost of the improvements made upon it would be especially burdensome to the Mosel, Weser, Weichsel, Memel and Warthe rivers. Upon these the traffic would, beyond doubt, fall off and their yield in tolls would be disappointing. If an eastern and western canal net were joined, all being subject to tolls under the canal law, the eastern division, including the streams at the present time free, would be seriously handicapped. The plan to make the streams bear the burden of all expenditures formerly made upon them is against all justice. The government should, as it has done in the past, assign a part of these expenses *à fonds perdu* as their benefits accrue largely to interests other than those of navigation. Future expenditures also, which work toward the cheapening of transportation, need not be met by special levies, but can be paid through the general increased ability to bear taxation.

At the present time the Prussian government is earnestly working to get the support of interested factions for a project establishing tolls on river navigation. What the result will be cannot yet be stated. Formerly the argument of the interests of the state railroads and that concerning protection against the import of cheap grains were prominent in this connection, but recently the argument has been emphasized that expenditures for the bettering of waterways should be paid by the waterways themselves, and an extensive program has been mapped out under this plan.

In this way the navigation interests have been divided into two camps: Those which are burdened with tolls at the present time are played off against those interests using the tax-free streams. To the first class the hope is held out that in the future the tolls upon them will be lessened if the heretofore free streams are compelled to contribute to the canal funds. All this is in the future.

Statement of the Amount of Tolls that must be raised on the more important River Courses to give a yield, above current Maintenance and Administration Charges, of 3½ per cent for Interest Payments on the Capital Invested and of a Contribution to a Sinking Fund.

1 WATERWAY.	2 Cost of construction and "regulating," 1866–1897-8, with a reduction of 50% due to expenses other than in the interest of navigation.	3 Expenditure for interest (3½%) and sinking fund on the improvements due to shipping.	4 Cost of maintenance and administration.	5 Total yearly expenditures	6 Income from tolls on traffic 1897-8. (The dues for use of safe harbors and other navigation facilities included.)	7 Yearly deficit.	8 Million kilometer tons carried.	9 Toll on each kilometric ton necessary to cover the deficit.
	Marks.	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*		*Pfennig.*
1. Rhine	17,000,000	595,000	1,235,000	1,830,000	142,000	1,688,000	4,045	0.04
2. Mosel	1,250,000	44,000	214,000	258,000	....	258,000	6	4.3
3. Weser, down to Bremen	4,180,000	146,000	537,000	683,000	15,000	668,000	109	0.6
4. Elbe, down to the mouth	11,015,000	386,000	1,514,000	1,900,000	95,000	1,805,000	2,475	0.07
5. Oder, down to Schwedt, except the canal division	11,790,000	413,000	1,560,000	1,973,000	125,000	1,848,000	751	0.2
6. Warthe	3,150,000	110,000	542,000	652,000	5,000	647,000	88	0.7
7. Weichsel and Nogat	10,990,000	385,000	1,991,000	2,376,000	37,000	2,339,000	175	1.3
8. Memel	6,310,000	221,000	312,000	533,000	....	533,000	112	0.5
Total	65,685,000	2,300,000	7,905,000	10,205,000	419,000	9,786,000	7,761	0.13

One great scruple is that the height of the navigation tolls are to be set by the administration and not through laws; at all events, immoderate tolls will yield nothing, as the inland transportation interests will be ruined. It is expected that the administration would be inclined to grant lighter tolls than the legislature and that they would be more independent of selfish interests. It is still to be proved whether these expectations are justified.

REFERENCES.

Schwabe. Die Entwickelung der deutschen Binnenschiffahrt bis zum Ende des 19. Jahrhunderts. Berlin, 1899.

Weber von. Ebenhoch. Bau, Betrieb und Verwaltung der natürlichen und künstlichen Wafferstrassen. Wien. 1895.

Schanz, G. Der Donau-Main-Kanal und seine Schicksale. Bamberg, 1894.

Schanz, G. Die Mainschiffahrt im 19. Jahrhundert und ihre künftige Entwickelung. Bamberg, 1894.

Grangez. Ernest. Précis historique et statistique des voies navigables de la France, etc. Paris, 1855.

Cohn, Gustav. Zur Geschichte und Politik des Verkehrswesens. Stuttgart, 1900.

Lotz, W. Die Aufgaben der Binnenwasserstrassen im Zeitalter der Eisenbahnen. (Beilage zur Allg. Zeitg. vom 17 u. 18. Juli. 1895.)

Eger Die Binnenschiffahrt in Europa und Nordamerika. Berlin, 1899.

Sympher. Die wirtschaftliche Bedeutung des Rhein-Elbe-Kanals. Berlin, 1899.

Sympher. Die Zunahme der Binnenschiffahrt in Deutschland 1875-95. Berlin, 1899. (S.-A. aus "Zeitschr f. Binnenschiffahrt.")

Prüsmann. Denkschrift über den Entwurf eines Rhein-Elbe-Kanals. Berlin, 1899.

Ulrich, F. Staffeltarif und Wasserstrassen. Berlin, 1894.

v. Weber. Die Wasserstrassen Nordeuropas. Leipzig, 1881.

Bubendey. Die modernen technischen Fortschritte auf dem Gebiete der Kanal und Flusschiffahrt (Vortrag, abgedruckt im Bayerischen Industrie und Gewerbeblatt 1899, S. 245 ff.) Fortgesetzt, 1907.

Cords, Th.M. Die Bedeutung der Binnenschiffahrt für die deutsche Seeschiffahrt (Münchener voltwirtsch. Studien, 81. Stück, Berlin u. Stuttgart, 1906.)

Johnson, Emory R. Inland Waterways: Their Relation to Transportation. Philadelphia, 1893. American Academy of Political and Social Science.

Upon the Question of Tolls on Waterways Consult:

Ulrich, F. Staatseisenbahnen, Staatswasserstrassen und die deutsche Wirtschaftspolitik. Leipzig, 1898.

Zoepfl, G. Die Finanzpolitik der Wasserstrassen (Heft 36 der Schriften des Deutsch-Ohsterr-Ungar. Verbandes für Binnenschiffahrt). Berlin, 1898.

Kritik der neusten Argumente für Abgaben auf den natürlichen Wasserstrassen von Lotz, Hatschek, Stein. (Heft 40 der Schriften des Deutsch-Oesterr-Ungar. Verbandes für Binnenschiffahrt.) Berlin, 1898.

Schumacher, H. Zur frage der Binnenschiffahrtsabgaben. Berlin, 1901.

Bd. 89 und 102 der Schriften des Vereins für Sozialpolitik. (In Band 102 eingehende Literaturangaben.)

Peters. Die finanzielle Entwickelung der preussichen Binnenwasserstrassen (Archiv f. Eisenbahnwesen, 1902.)

Mayer, Otto. Schiffahrtsabgaben. Tübingen, 1907.

Abwehr-Kundgebung gegen die Wiedereinführung von Schiffahrtsabgaben auf den natürlichen Wasserstrassen, insbesondere auf dem Rhein vom 16 Februar, 1907. Mannheim, 1907.

Wirminghaus, A. Der Rhein und die Schiffahrtsabgaben. (Jahrbucher für Nationalokonomie und Statistik, III. Folge, Bd. XXXIV, Jena, 1907.)

BOOK DEPARTMENT

NOTES

Aimes, H. H. S. *A History of Slavery in Cuba,* 1511, 1868. Pp. xi, 298. New York: G. P. Putnam's Sons, 1907.

Reserved for later notice.

Aucuy, Marc. *Les Systèmes Socialistes d'Exchange.* Pp. vii, 372. Price, 3 fr. Paris: Félix Alcan, 1908.

The second volume in Alcan's library of Individualism and Socialism is a critical study of socialist systems of exchange. M. Aucuy undertakes to show that socialism of exchange is impossible without socialism of production, and with this in view examines, in both their theoretical and their practical aspects, the systems of Owen and Proudhon, the less known ideas of Vidal and Haeck, and the *comptabilisme social* of the Belgian Salvoy. The main interest of the book for most readers lies in the careful exposition of the ideas of the last three writers; for the thesis of the work is, of course, not new, dating back to Karl Marx. It is none the less worth while to examine the theories of these "socialists in spite of themselves," as Professor Deschamps calls them in the introduction to the book, in order to point out the fallacy of thinking that economic injustice can be done away with by merely tinkering the system of exchange without changing production. Men have always tried to find the source of their economic troubles in the working of the money system, instead of tracing the injustices of our present distribution to their roots in the system of production. M. Aucuy's book is a justified protest against this sort of thinking.

Barnard, J. Lynn. *Factory Legislation in Pennsylvania: Its History and Administration.* Pp. xi, 178. Price, $1.50. Philadelphia: University of Pennsylvania, 1907. John C. Winston Co., Selling Agents.

Under this title, the author has given a much needed and scholarly account of this field of social progress in Pennsylvania. The subject matter is divided almost evenly into the two fields of History and Administration. Under the former, the movement for the legal regulation of women and child labor is carefully reviewed from the days of 1824 until the present date. Allied movements, such as sweatshop, fire-escape and bake-shop legislation are duly treated. Particular emphasis is thrown on the gravity of the child-labor situation in Pennsylvania and the work of certain public-spirited organizations and citizens since 1904 in attempting to ameliorate these conditions.

Under the subject of Administration, the author shows an inside knowledge of the conditions which make easy the violation of the factory law. Here, again, he shows how far short of even an imperfect standard we have fallen in regard to caring for our future citizens—the children. Dr.

Barnard, from his actual experience in child-labor legislation and from his valuable experience as a teacher, is in a position to point out a way to higher things.

Books such as this, covering all the large industrial states, would soon remove the criticism one sometimes hears that college courses in social welfare would be very good were they not "spread out so thin."

Barnett, G. E. *A Trial Bibliography of American Trade Union Publications.* Pp. 139. Baltimore: Johns Hopkins Press. 1907.

Bazaine, M. *La Intervencion Francesa en Mexico.* Pp. 283. Price 75 cents. Mexico: G. Garcia. 1907.

Beazley, C. R. *Dawn of Modern Geography.* Vol. III. Pp. xi, 638. Price, $6.50. New York: The Oxford University Press. 1906.

Reserved for later notice.

Berens, Lewis H. *The Digger Movement in the Days of the Commonwealth.* Pp. 259. Price, $2.00. Chicago: Public Publishing Co., 1906.

The Digger Movement,—so called because the devotees of the movement went out into the public commons and dug them up in an effort to secure crops from the land which, according to their theory, was anybody's for the using,—centered around the life and writings of Gerrard Winstanley.

Starting from a standpoint strictly religious, Winstanley worked out the theory of his digger movement. He says: "In the beginning of time, the great Creator, Reason, made the earth to be a common treasury to preserve beasts, birds, fishes and man, the Lord who was to govern this creation." Therefore, he argues, the earth belongs equally to all. When equal freedom of the land is denied to some, this is a sign that the people are not really free, but only seemingly so.

Winstanley's whole doctrine is summed up in these words—"True Commonwealth's Freedom lies in the free enjoyment of the earth."

He wrote principally during the administration of Oliver Cromwell. His movement was hindered by the government officials and the officers of the troops stationed in his neighborhood. As with all reform movements, the people for whose benefit the movement was made were the loudest in their outcries and ridicule. After working for a long time in the face of this opposition, at the digging of the commons and writing appeals to the nation, Winstanley was finally forced to desist. In his work we have perhaps the first definite statement of the thought that the returns from natural resources are given to all and should be enjoyed equally by all. This is the doctrine which, worked out along a wholly different line by Henry George, brings him to his single tax theory.

Bierly, W. R. *Police Power: State and Federal.* Pp. xxviii, 338. Price, $3.50. Philadelphia: Rees Welsh & Co. 1907.

Reserved for later notice.

Bond, Beverly, Jr. *The Monroe Mission to France, 1794-1796.* Pp. 104. Baltimore: The Johns Hopkins Press, 1907.

It is the professed purpose of the writer to present a detailed account of this affair with a view to showing definitely the circumstances and motives of the actors. The diplomatic papers of the state department and the Monroe papers in the library of congress are found to shed new light on the inner history of this diplomatic game. The study clearly brings out the interesting fact that it was part of the game of the government to appoint Monroe as envoy to France. France was suspicious of the real purpose of Jay's mission to Great Britian. Monroe, an Anti-Federal and a strong French sympathizer, was sent to allay this suspicion. Due blame is accorded the American government for withholding from Monroe the full extent of Jay's powers, and so using him as a means of practicing this deception on the French government. On the other hand, Monroe's weakness in posing as the representative of the American people instead of the government, of betraying too openly his feelings for France and of publicly criticizing the government, all receive due censure.

Belated praise is accorded Monroe for the creditable part he played in keeping France at peace at a critical period, in protecting American interests abroad and in helping to secure the treaties with Algiers and Spain. Altogether, it is an interesting bit of history, and the author has succeeded in shedding new light upon this episode.

Boyd, Carl Evans. *Cases on Constitutional Law.* Second edition. Pp. xi, 827. Price, $3.00. Chicago: Callaghan & Co., 1907.

This collection of cases, originally published in 1898, has been of increasing popularity for use in connection with courses on constitutional law. It is a compendious summary of the chief decisions on constitutional law, in somewhat over eight hundred pages. No selection can suit exactly the requirements of all students, but Mr. Boyd has made an excellent choice of cases which the average man will find well adapted to his wants.

The text is printed literally with the omission only of the arguments and statements of fact which are unnecessary for the illustration of the point of law involved. The notes are few as the author has preferred to use the space they would have taken for additional decisions. The present edition contains a supplement giving the chief decisions from 1898 to the spring of 1904. The type and paper are good and a substantial buckram binding insures the wearing qualities of the book.

Boynton, F. D. *School Civics.* Pp. xli, 368. Price, $1.00. Boston: Ginn & Co. 1907.

Brewster, William N. *The Evolution of New China.* Pp. 316. Price, $1.25. Cincinnati: Jennings & Graham, 1907.

The book is the substance of a series of lectures delivered by the author before the students of the Boston University School of Theology. The object is to "discuss the trend of events," and the author, being a missionary, devoted somewhat over half the volume to the trend of things religious. For the average reader, therefore, the first half of the book holds the chief interest; the later chapters are hardly likely to appeal to anyone but the enthusiastic mission worker.

In the chapter on the "Greatness of China" is given a very clear and not seriously exaggerated summary of the tremendous resources of the empire, and a brief description of the highly-developed system of agriculture. It is certainly a most glowing future which the author's enthusiasm leads him to paint. The Chinese are to people the vast wilderness of Borneo; they are to be the dominant race of the eastern tropics, through intermarriage with the natives; they are to be the intellectual nation of the Orient; and they will largely control Oriental commerce "before the middle of this century. All of these conclusions are derived by the author from an analysis of Chinese character and things Chinese. It is often difficult, however, to follow some of the leaps in his logic.

From the political standpoint, Mr. Brewster regards China as "a great people, but an imbecile state; commercially sound, but politically rotten." This condition he ascribes to the presence of the Manchu rulers, a non-Chinese dynasty, on the throne, and the universal evil of political graft which, from examples cited, must even surpass that of our own more enlightened western civilization. The remedy for the first of these evils will be found in the impending constitutional government, and for the latter in the spread of Christianity, by which loyalty to the state will be made to replace the present attitude of ancestor worship and selfish interests.

The low industrial condition is not to be attributed to overpopulation, unproductive soil, laziness or intellectual incapacity, but to the fact that the "brain and the brawn are not united." In support of this argument, the author draws very vivid pictures of the primitive methods encountered in every field of labor. He believes firmly in the solution by industrial education, but weakens his argument by assuming that the education is to come from missionaries. Unfortunately, the average missionary knows all too little about farming implements and machine shops. Mr. Brewster's enthusiasm for his work appears to have obscured his recognition of the fact that trade and commerce and general world intercourse are the factors which have lifted nations in the past and must be expected to do the major part of the work in the future.

The main theme of the book appears to be that missions and the spread of Christianity will prove the solution of all difficulties and make China the foremost nation of the East. But the experience in Japan and recent progress there are not easily reconciled to this view.

Brisco, Norris A. *The Economic Policy of Robert Walpole.* Pp. 217. Price, $1.50. New York: Macmillan Company, 1907.

Thorough study has been accorded to the large part played by Robert Walpole in the constitutional history of his period and to his political and foreign policy; scant and only incidental treatment to Walpole, the financier and economist. It is an era of great questions in politics and foreign policies. It is likewise an era of important financial and economic questions. As the author says, "There has hitherto been no systematic treatment of the economic policy of Robert Walpole, and it was felt here was a field for study."

This comprehensive and orderly treatment is a welcome addition to the library of the student of economics. But it has also a great value to the student of political history, for historians are realizing to a greater degree the modifying influence of economic affairs on the course of political events.

To his fiscal policy one chapter is devoted. An account is given of Walpole's sound financial judgment amidst the disorders attendant upon the bursting of the speculative bubble, as likewise of his keen foresight in restoring confidence in the government by instituting a sinking fund to guarantee payment of the national debt. Walpole was a firm advocate of the merchantilistic policy of trade. A discussion of his endeavors to put this policy into practice by reforms in the taxes and customs duties covers two chapters. His excise plan and his efforts to repeal the duties on imports met great opposition and, in general, failed of realization, and shows that Walpole as a reformer was simply in advance of his time. The student of colonial history will find an interesting and able chapter on Walpole's colonial policy and his system of bounties. To his work of developing home industry and building up a foreign trade, two chapters are allotted. The monograph is well and clearly written.

Browne, H. A. *Bonaparte in Egypt and the Egyptians of To-Day.* Pp. 410. Price, $3.00. New York: Charles Scribner's Sons, Importers. 1907.

Reserved for later notice.

Bullock, Charles J. *Finances and Financial Policy of Massachusetts from 1780 to 1905.* Pp. 144. Price, $1.00. New York: American Economic Association, 1907.

This historical sketch of the finances of Massachusetts as a commonwealth for a century and a quarter is purely one of general questions of finance without regard to details of legislation or administration. The author "has been content to describe policies, estimate critically their results, and allow the narrative to point its own moral, if moral it has."

The financial history of the state is divided into six periods, to each of which is devoted a chapter. The first period, from 1780-1794, is one concerned with the efforts towards the rehabilitation of disordered finances, the heritage of Revolutionary days. The next period, 1794-1825, witnesses the extinction of the debt and times of financial prosperity. The period from 1825 to 1860 is probably one of the most dramatic interest in the annals of state finances. In the history of Massachusetts it is an era of internal improvements, and of general prosperity attendant upon the speculative movement which had its climax in the panic of 1837, and it sees the gradually widening gap between expenditures and revenues and the unsuccessful efforts to avoid a state tax. The history of state finances of this period has been neglected and there is need of a comprehensive and orderly treatment of the disordered finances of the states, with the question of financing internal improvements, issues of bonds, repudiation of bonds, and assumption of these debts by the federal government.

The Civil War period is one of onerous financial burdens, caused by war loans, with the necessity of finding new sources of income. The period after the war, down to 1880, concerns itself with the difficulties of financing railroad enterprises, of the crisis of 1873 and the consequent retrenchment in all the departments of the government. The last quarter of a century is one of steady increase in state expenditures and growth of a new state debt.

The appendix contains tables of statistics of state tax from 1789 to 1905, and the ordinary revenues and expenditures for the period of 1816 to 1860. There is also a bibliography. Works dealing with figures and finances are apt to be dry and dull, but it is a pleasure to find in this monograph an account very clear, comprehensive and readable.

Bureau of American Ethnology. Twenty-fourth Annual Report. 1902-03. Pp. xl, 846. Washington: Government Printing Office, 1907.

In addition to the usual reports of the work done by the bureau, this volume contains an excellent monograph, by Stewart Culin, on the Games of the North American Indians, which is by all odds the best study of the subject in print, and should go far towards dispelling much of the still extant popular tradition that the Indian was sullen and morose, with no fondness for play. There are many illustrations accompanying the text.

Bureau of American Ethnology. Twenty-fifth Annual Report. 1903-04. Pp. xxix, 296. Plates cxxix. Washington: Government Printing Office, 1907.

The two papers in this volume were written by Dr. Jesse Walter Fewkes. The first, on "The Aborigines of Porto Rico and Neighboring Islands," is an important contribution to our meager knowledge of the earlier inhabitants of these islands, even if the material is largely drawn from early accounts, supplemented, so far as possible, by personal observation of extant remains. The second paper deals with "Certain Antiquities of Eastern Mexico"—a description of some important ruins and cultural objects. The text is supplemented by a large number of plates.

Calvert, A. F., and Gallichan, W. M. *Cordova.* Pp. 108. 159 plates New York: John Lane Co., 1907.

This book is well planned to put the reader in a frame of mind to appreciate the charm of Cordova, the ancient Moslem capital of Spain. To do the city justice one must love the past and see file before him the various nationalities which at different periods have contributed the elements which in ruins make up the Cordova of to-day.

Beautifully situated in a fertile valley surrounded by rugged mountains, clean,—for a Spanish city,—quiet, prosperous, but wholly lacking in enterprise, and with its face turned toward the past, the city is possessed by a certain unreality which adds greatly to its charm. It is not forbidding, as is Toledo, nor has it the air of desertion present in so many of the old Spanish cities, but it is a capital left one side by the stream of present-day life and fully content to preserve its mediæval characteristics.

The author has excellent powers of description, and leads us around the city and through the mosque in a way that enables the reader to catch the spirit of the place exceptionally well. A historical sketch of three chapters gives the setting of the town in the life of the peninsula, and another chapter introduces us to its famous sons, Seneca, Lucan, El Gran Capitan and others less noted. One hundred and fifty-nine excellent plates give an outlook upon the chief objects of interest. These form almost half of the book and contribute to its value in at least the same proportion.

Calvert, T. H. *Regulation of Commerce under the Federal Constitution.* Pp. xiv, 380. Price, $3.00. Northport, N. Y.: E. Thompson Co. 1907.
Reserved for later notice.

Casson, H. N. *The Romance of Steel.* Pp. xiv, 376. Price, $2.50. New York: A. S. Barnes & Co. 1907.
See Book Reviews.

Chatterton-Hill, George. *Heredity and Selection in Sociology.* Pp. xxx, 571. Price, $4.50. New York: The Macmillan Co., 1907.
"It will suffice to say that training in sociology must be preceded by training in biology; and that none of the great problems of sociology can be understood, much less solved, unless the sociologist possesses sufficient training in biology, and sufficient knowledge of the facts concerning heredity and selection." The book begins, therefore, with a long and really good discussion of heredity. Our criticism upon these first one hundred and sixty pages is that the author has allowed himself to be drawn too much into the discussion of moot points which should be left to the biologist, and that he has clung too closely to the ideas of Weismann and seemingly underrated the work of De Vries. It is almost needless to add that the theory of the inheritance of acquired characteristics is rejected.

The chief criticism of the rest of the volume is its lack of plan or continuity and the wholly eclectic method of treatment. Some chapters seem to be reprints of articles elsewhere used, while within a given chapter very divergent topics are considered. Over one hundred pages are devoted to Part II—Social Pathology, which includes six chapters—Suicide, Insanity and Syphilis as Social Factors; Social Selection and Inverse Selection; Conflict and Progress; Concluding Remarks. Occasionally there is very careless use of language or else the author forgets his biology, as when he writes of "hereditary syphilis."

In Part III he discusses The Biological and Traditional Factors of Race Progress; The Bankruptcy of Liberalism; Socialism and Science; Religion as a Social Force. At times he seems to think that society is going to decay. Neither liberalism, socialism, science nor Christianity will be effective in promoting social development. Although Christianity as now understood will fail, yet some religious system will develop. Although Mr. Hill disputes Mr. Benjamin Kidd's arguments he nevertheless agrees in "the necessity of a supra-rational ideal for the individual and society."

For the general idea of the author there is much to be said. His present exposition is not satisfactory and should not be final. Many of the criticisms and suggestions he makes are very valuable and deserve attention. "Instead of seeking to extirpate diseased living generations, in the interests of the race which is to come after us, every resource of applied science is devoted to prolonging the life of weak and biologically useless persons, thus permitting their reproduction"; or again, "So far, then, as altruistic influences are at work in social evolution, it is impossible to admit the beneficial tendencies of these influences." If true, these developments demand radical action. The volume deserves the attention of serious students.

Commons, John R. *Proportional Representation.* Pp. x, 369. Price, $1.25. New York: Macmillan Co., 1907.

This is a reprint of a well-known text first published in 1896. The clearly discussed thesis of the book is already familiar to our readers. Six appendices bring the subject down to date and place greater stress upon certain subjects than was given them in the original work. Primary elections and the initiative and referendum, especially in their relation to municipal government, are considered here. The additions to the book serve to reinforce the argument against the injustice of our present method of elections and to demonstrate one of the causes of the much discussed "failure of representative government."

Conyngton, T. *The Modern Corporation.* 2d Ed. Pp. xii, 290. Price, $2.00. New York: Ronald Press. 1907.

Reserved for later notice.

Cotes, E. *Signs and Portents in the Far East.* Pp. xi, 308. Price, $2.50. New York: G P. Putnam's Sons. 1907.

Reserved for later notice.

Creanga, G. D. *Grunbesitzverteilung und Bauernfrage in Rumänien.* Pp. 207. Price, 5.40m. Leipzig: Duncker & Humblot. 1907.

Cronbach, E. *Die Osterreichische Spitzenhausindustrie.* Pp. 212. Price, 5m. Wien: Franz Deuticke. 1907.

Cronbach, E. *Das landwirtschaftliche Betriebsproblem.* Pp. 338. Wien: Carl Konegen. 1907.

Day, C. *A History of Commerce.* Pp. xli, 626. Price, $2.00. New York: Longmans, Green & Co. 1907.

Reserved for later notice.

Dow, E. W. *Atlas of European History.* Pp. 46. Plates, 32. New York: Henry Holt & Co., 1907.

Maps well used are one of the most efficient aids in impressing the facts of history connected with the national territorial growth upon the mind of the student. This excellent collection has the virtue not only of being published at a moderate price, but covers the historical development of the European nations from earliest times down to the present—not for a single period only. The presentation is made in detail great enough to meet the needs of one intent upon a special field and embodies the results of the best European historical map making.

Dunning, W. A. *Reconstruction: Political and Economic.* Pp. xvi, 378. Price, $2.00. New York: Harper & Bros. 1907.

Reserved for later notice.

Ein Land der Zukunft. By a German Officer. Pp. 274. Price, 5 m. Munich: J. Greger.

This interesting record of a trip through one of the most promising of South American republics gives the reader a vivid impression of both the accomplishments and needs of the Argentine. Contrasts are numerous. The finely planned capital and the raw provincial towns, the good railways and the impassable country roads, the unexhaustible agricultural resources of the pampas and the barrenness of the desert highlands and many others of the striking contrasts to be found in the republic are passed in review.

The national ambitions of Germany appear in the point of view of the writer constantly. Argentine is a land of the future, the best point for emigration in the twentieth century as the United States was in the nineteenth. Toward this land of promise German emigration should be consciously turned. The prosperous condition of the German colonists settled in the country is a matter of justifiable pride, but one is surprised to hear, in spite of the common belief in the preponderance of English capital and enterprise in this part of the world, that "Imports and Exports . . . are chiefly in the hands of Germans." The greatest German colony of the future, at least in an ethnic sense, should be in Argentina. Though this national caste pervades many of the pages the author gives interesting sketches of political, social, industrial and military developments which are of real value as sources of facts. The observations on present-day conditions are keen and apparently critical, though often the author allows himself to be lead for a page or two into the role of the prophet rather than that of the interpreter—a privilege which should be granted to an author who avowedly writes of a land of the future. In justice, it must be said, however, that as a rule the author walks "with his feet upon the ground."

The Argentine is to be the leader of South America. With the creation of a strong spirit of nationality and an army so strong as to impose peace on enemies both domestic and foreign, the country would at once spring into the position of permanent leader on the continent. This is in summary the message of the work.

Fabrication et Travail du Verre. Pp. xxiv, 263. Brussels: J. Lebègue et Cie. 1907.

Forbes-Lindsay, C. H. *The Philippines.* Pp. 566. Price, $3.00. Philadelphia: J. C. Winston Co., 1906.

This book is a reprint, under separate title, of volume two of the author's work, "America's Insular Possessions," reviewed in the ANNALS, July, 1907.

Forrest, J. Dorsey. *The Development of Western Civilization.* Pp. xii, 406. Price, $2.00. Chicago: The University of Chicago Press, 1907.

Primarily the book is a collection of historic facts tied together loosely and at times having little apparent connection. In that the work is disappointing, for one naturally expects a "development" to show an unbroken line of growth and advance. The work represents an enormous amount of research, but a woeful lack of classification and definite arrangement.

The author takes up first ancient society, and treats of the influence which Israel, Egypt and Phœnicia, Greece and Rome had on the later thought; then passes on to the problems of Mediæval Society; The Organization of Agriculture; The Development of Commerce; The Reformation; and ends with a discussion of modern social movements.

There is a tendency in the early part of the book to explain everything in terms of environment,—particularly geographical environment. For example, on page 24, is the statement that Greek characteristics "were due in part to geographical conditions, and in part to the social life which, as shown above, was largely determined by those conditions." In other words, geography, acting directly and indirectly, made Greek characteristics. While the advocates of the theory of the influence of geography on human actions and thought carry their ideas to extremes, they would scarcely make so far-reaching a statement as this one.

In dealing with social and economic problems the author shows a singular lack of appreciation of the practical side of questions. His statements are bookish and not careful or well considered. The discussion of such problems as the Factory System, the Industrial Revolution and the Rise of Socialism are disappointing.

Passing over the fact that the book makes difficult and rather uninteresting reading,—for that is a fault common to a great mass of recent literature on social science,—one may at least expect, on finishing a chapter, or section of a chapter, to have in mind some definite thought which the author has been trying to convey. But this is not the case with "The Development of Western Civilization."

The book suffers from a fault which has become unpleasantly common among modern works of the character. The author has assembled a large number of facts and has then written a book containing these facts, without making any great attempt to see that the facts formed a logical sequence, or that a consecutive thought formed a center for the book. In short, the facts in the present work are undigested. Facts should suggest ideas, and ideas should lead to conclusions, but the author has been satisfied with the facts.

Foulke, W. D. Translated by. *History of the Langobards*, by Paul the Deacon. Pp. 437. Price, $1.50. New York: Longmans, Green & Company, 1907.

This history, by Paul the Deacon, one of the best known authors of the Middle Ages, has been translated into German, French and Italian, but it has remained for the present translator to do a good work in giving the student an English version. The introduction contains a scholarly and careful treatment of the life and writings of Paul the Deacon with a historical and literary estimate of his work. The body of the history is accompanied with full explanatory and critical notes which show the work of a trained scholar. The appendices contain a discussion of the ethnological status of the Langobards; an account of the sources from which Paul derived his history, and a translation of Paul's poems. The volume also contains three very helpful and instructive maps, and a good index.

It is a splendid piece of work in every way, scholarly, scientific and painstaking. Students of Italian history will be grateful to the translator.

Friedman, H. G. *The Taxation of Corporations in Massachusetts.* Pp. 178. Price, $1.50. New York: Columbia University Press. 1907.

Garcia, G. *Correspondencia Secreta de los Principales Intervencionistas Mexicanos.* Pp. 316. Mexico: Ch. Bouret. 1907.

Gilbert, J. H. *Trade and Currency in Early Oregon.* Pp. 126. Price, $1.00. New York: Columbia University Press. 1907.

Goodrich, A. N. *Cruise and Captures of the Alabama.* Pp. 216. Price, 75 cents. Minneapolis: H. W. Wilson Co.

Griffis, W. E. *Corea, the Hermit Nation.* Pp. xxvii, 512. Price, $2.50. New York: Charles Scribner's Sons, 1907.

Five new chapters added to those contained in the former seven editions of Mr. Griffis' book made up the present work. Since 1882, when the first edition appeared, this book has been the most widely read interpretation of the little known and less understood country which has just recently passed out of the list of nations into that of dependencies. The author's intimacy with Oriental affairs through his former connection with the University of Tokio and his wide travel and long residence in eastern countries lends authority to his opinion. It comes as a relief after the severe adverse criticism to which almost all writers have subjected the Koreans to hear that there lies within the people at large the possibility of a regeneration. The author, however, does not blink the shortcomings of the government, and states many facts which point to the justification of the alleged "high-handed" policy of Japan. With the Japanese management of the situation he is not altogether satisfied. The Nipponese have been too careless in allowing the lower class, the adventurers and sharpers to stream into the country before the government had been established upon a basis such that it could cope with the new responsibilities. In its new form the book brings up to date a history filled with misfortunes and disappointments—the story of a nation ill-fated both on account of its peculiar international situation and the almost unexampled inefficiency of its ruling class.

Griffis, William Elliot. *The Japanese Nation in Evolution.* Pp. xii, 408. Price, $1.25. New York: Thomas Y. Crowell, 1907.

"The unchanging trait in a Japanese is to covet things better and ever to seek a more excellent way." With this point of view the author in his latest book on Japan traces the development of this people linking Orient and Occident, from their early Aryan ancestors, through picturesque and bloody Mongolian centuries up to their present "more excellent way." He affirms that "no other nation is so fitted to welcome the new without losing the old. . . . Little do they invent. Mightily do they adopt." Mr. Griffis' faith in Japan's possibilities of growth (based on his wide knowledge of country and people) is inspiring. He believes the Japanese to be "not only the most improvable race in Asia, but possibly even in the world."

An immense amount of material, geographical, legendary, archæological and historic, produces some confusion when condensed into so small a book, and the frequency of strange names adds further difficulty in reading.

Hague Ordains, As The. Pp. vi, 359. Price, $1.50. New York: Henry Holt & Co. 1907.
Reserved for later notice.

Haines, H. S. *Railway Corporations as Public Servants.* Pp. 233. Price, $1.50. New York: Macmillan Co. 1907.
Reserved for later notice.

Hainisch, M. *Die entstehung des Kapitalzinses.* Pp. 112. Price, 2.50m. Leipzig: Franz Deuticke. 1907.

Hall, Bolton. *Three Acres and Liberty.* Pp. xxii, 435. Price, $1.75. New York: Macmillan Company, 1907.
How can we be free from the burdens which city life has imposed upon us and from the uncertainty of securing a living in our modern industrial system? This is the question which the author attempts to answer in the four hundred pages of "Three Acres and Liberty." The book is really a brief for intensive farming. Only a few pages are devoted to theory, the greater number being taken up with very practical discussions of the kinds of crops that should be raised on certain lands, the character of land which should be purchased or rented and the method of treating this purchased or rented land after it has been secured.

The author deals in a very comprehensive way with many of the besetting problems of the small farmer. He gives instances of small farmers who have secured a living and paid off mortgages on two or three acres of land which others passed by as useless. The average American farmer does not know what intensive farming means. He "thinks that he has done well if he gets 150 or 200 bushels of potatoes from an acre. He does not know that others have gotten 1,284 bushels." By intensive culture, by care, by scientific methods, a man can raise on ten acres more and better produce than is raised by the average farmer on fifty acres.

Of course the book deals with small farming near the city more than with extensive farming in remote districts, one of the author's contentions being that a man moving out a few miles can enjoy all of the benefits of city life without incurring any of its discomforts. The book is well worth the careful consideration of any farmer who is producing truck; it is invaluable to any one who is contemplating small-scale farming near a large city; and it presents a ray of hope to the man in the city who, with a small salary and a large family, is struggling to make his salary meet his necessities and at the same time to secure for his children an education.

Hart, Gordon. *Woman and the Race.* Pp. 264. Price, $1.00. Westwood, Mass.: The Ariel Press, 1907.
The author deals in a very striking manner with the relation between modern women and the social organism. He says that one of the great

evils of the day is ignorance among young mothers. We would not dare entrust our national defence to an army which had never had any military training, and yet each year thousands of children are born whose mothers' only preparation for caring for the future generation has, in a great number of cases, been secured from playmates and companions whose ideas were not of the most desirable. Neither in the school nor in the home are men and women prepared for their reciprocal relations in life, and the marriage contract has generated into a mere joining together of persons who are often dissimilar in every thought and habit.

Upon the knowledge or lack of knowledge of these mothers and fathers will depend the joy or misery, health or sickness, happiness or wretchedness of millions of children. The author shows a wide knowledge and expresses his thought in a way that deserves an audience seldom accorded to a modern book not in novel form.

Hazen, Allen. *Clean Water and How to Get It.* Pp. x, 178. New York: John Wiley & Sons, 1907.

It is seldom that one finds a book dealing with a technical subject which has the universal interest of Mr. Hazen's recent volume. In the localities where the population is increasingly denser every year, the problem of preventing or overcoming contamination and pollution of the water supply is constantly more difficult to solve. Few municipalities can afford, or are so situated as to be able to control the entire catchment area from which their water supply is derived.

The opening chapters of the book deal with the relative advantages and disadvantages of the usual sources—reservoirs, lakes, rivers, and ground water. The river in most cases in the United States is the only source from which a sufficient quantity is available. The methods and devices for purifying water and the operation of systems under filtration form the main theme of the book. Throughout the volume the experiences of various American cities are cited, a fact which adds greatly to its practical value.

One chapter in particular, on the use and measurement of water, could be read with great profit by the citizens of many American cities where the daily consumption per capita, with no meters, is excessive. Mr. Hazen contends that such waste of water is needless, increasing the cost of supply by one-third or one-half. Mr. Hazen's other contention is that no man will object to paying for a supply of clean water.

The book is a valuable, as well as an interesting exposition of the most important question in present-day municipal problems.

Holman, Frederick V. *Dr. John McLoughlin, the Father of Oregon.* Pp. 301. Price, $2.50. Cleveland: the Arthur H. Clark Co., 1907.

This volume contains a biographical sketch of the "Father of Oregon," by which name Dr. John McLoughlin is known throughout the Northwest, because of the work he did as the representative of the Hudson Bay Company in the Oregon country. It comprises the history of the Oregon country until the establishment of the Oregon Territorial Government and includes a statement of the early work and struggles of the Presbyterian and Methodist missions among the Indians.

The character of the early immigrants is pointed out as is also the kindness shown them by Dr. McLoughlin, who saved them from starvation and the onslaught of the Indians and aided them in the midst of their hardships.

The latter part of the work deals with a land claim of which Dr. McLoughlin was deprived, and sets him forth as being greatly persecuted. Documents and letters form an appendix to support this claim of injustice. The author in his preface does not claim this to be a full biography of Dr McLoughlin, but simply an enlargement upon an oral address delivered on McLoughlin Day during the Lewis and Clark Exposition.

Holt, Henry. *On the Civic Relations.* Pp. xxxi, 668. Price, $1.75. New York: Houghton, Mifflin & Co., 1907.

This is a reprint in enlarged form of the author's "Talks on Civics." Fortunately for the interest of the work it has been rewritten from the "question and answer" form into direct exposition which relieves it of the choppy character of the earlier editions. Further changes are made by writing in greater detail upon such divisions of the subjects treated as have, through recent developments, come to be of greater popular interest. These amplifications are especially important in the treatment given the labor question and socialism and municipal trading.

First designed for use by pupils of the common school, this work has outgrown its original purpose, though in portions a certain "juvenile" character has been presented both in manner of presentation and vocabulary. No pretense is made by the author to originality, but the discussions are presented in such form that they make an interesting and valuable storehouse of general information on civics for the public, to which the work is now addressed—the undergraduates of the colleges and the general reader.

Hone, Nathaniel J. *The Manor and Manorial Records.* Pp. xv, 357. Price, $3.00. New York: E. P. Dutton & Co., 1906.

This is a good book. It belongs to the series known as "The Antiquary's Books," although the American imprint does not state that fact. It will be understood then that it is not primarily a work of investigation. The author, however, uses documents freely for purposes of illustration, and his book obtains thereby much of the clearness and force usually accompanying work drawn immediately from the original sources. He has evidently examined many manorial records, though his generalizations are not drawn from them, but from the books of other men about them. These secondary works which he has utilized are in the main the best books on the subject. For the early period he has been especially dependent on Vinogradoff, "Growth of the Manor," and to a less degree on the same author's "Villainage in England." Altogether, the work is a clear, moderate, sensible and readable description of the main characteristics of the mediæval manor.

It is noticeable how much clearer the knowledge of the mediæval manor has become since it has been approached from an economic rather than from a legal point of view. It is true that the manor is in some senses a legal conception. But this aspect of the manor is vague, artificial, arbitrary, comprehensible only by lawyers, and in their minds quite detached from material reality. Mr. Hone gives such a definition in his preface. "A certain circuit of ground granted by the king to some baron or man of worth as an inheritance for him and his heirs, with the exercise of such jurisdiction within the said compass as the king saw fit to grant, and subject to the performance of such services and yearly rents as were by the grant required." As one studies English history one searches in vain for any actual process such as here described, and as one reads manorial records,—extents, *compotus* rolls, and court rolls, the picture that rises in one's mind bears no resemblance whatever to the lawyers' definition.

On the other hand the conception of the manor as primarily an agricultural organization, the demesne farm of the lord of the manor intermingled with the small holdings of the tenants, the whole held together by agricultural as well as legal and social bonds—a little community carrying on its economic as well as its legal life, under the control of, and largely for the benefit of, the lord of the manor, we get something tangible, which a fuller study of the records, manorial and national, steadily tends to clear up.

The material for such fuller study is shown to exist in great abundance by Mr. Hone's lists of court rolls, given in his appendix. This is a most valuable and serious contribution to the subject. The main body of court-rolls in the Public Record Office is already listed in the Deputy Keeper of the Rolls' Series of Lists and Indexes, No. 6. In addition to this, however, Mr. Hone has printed lists of the court rolls existing in the custody of the Ecclesiastical Commissioners, of the Land Revenue Office, of the British Museum, Lambeth Palace, and the Bodleian Library. These lists show the striking extent of these records.

It may be remarked that this bibliography discloses one of Mr. Hone's deficiencies, his relative unfamiliarity with American and German work on his subject. He makes no mention, for instance, of Ashley, Page, Gay, or Cheyney; Meitzen or Schmoller, all of whom have contributed directly to his subject and a reading of whose contributions would have saved him from his weak or mistaken treatment of the commutation of services, of the enclosures of the fifteenth and sixteenth centuries, and perhaps of some of the other branches of his study.

Howe, F. C. *The British City.* Pp. xvi, 370. Price, $1.50. New York: Chas. Scribner's Sons. 1907.

Reserved for later notice.

Hueffner, Ford Madox. *England and the English.* Pp. xxi, 354. Price, $2.00. New York: McClure, Phillips & Co., 1907.

To undertake the interpretation of the spirit which characterizes a nation of people appears at first glance to be a large task, yet the author of "England and the English" has struck the right note in a most delightful manner.

The book covers the subject in three general parts, the first devoted to the many sides of life in London and what the real London and Londoner are; the second part is devoted to the country folk; and the third, to the English spirit in general.

The most striking feature of the volume is the touch of "local atmosphere," giving the whole an air of reality in the reader's mind, and creating an entirely new appreciation of the forces which make things English so distinctive. Many a page in the book rambles on rather aimlessly or with an over abundance of attention to minute details.

There is, however, an elusive charm about the book which seems to lie in this very approach to unconscious garrulousness. It suggests "Cranford" with its gossipy, ever delightful glimpses into the life of that provincial village. It is a book for many hours of most enjoyable reading, for it gives a picture of England and the English to-day in the same way that Mrs. Gaskill portrayed the rural life of a single provincial village—an appreciation of his country and countrymen by an Englishman.

Hulbert, A. B. *The Ohio River.* Pp. xiv, 378. Price, $3.50. New York: G. P. Putnam's Sons. 1906.

Reserved for later notice.

Hutchinson, Alfred L. *The Limit of Wealth.* Pp. 270. Price, $1.25. New York: The Macmillan Company, 1907.

The book contains an account, dated A. D. 1944, of changes brought about in the industrial system of the United States as the result of a suggestion made in 1913 by a Wisconsin school master. The proposal was in brief: "Limit the amount of wealth," which each man may accumulate.

The program consists of an income tax and an inheritance tax, amounting in some instances to confiscation,—based on ideas that have been advocated for years by reformers and recently by President Roosevelt. This scheme was put through at a general election in 1912. The wealth which was thus confiscated to the government was used for three purposes,—five billion dollars was appropriated for roads; five hundred million was appropriated for charity; and the government established a bureau of insurance. At the same time, the post office passed into the hands of a company which cut the cost of operation in half and reduced the expense to the public in the same proportion. In its conception the book is childish. The author writes like a man who knows nothing of the practical workings of the modern government.

International Arbitration. Report of the thirteenth annual meeting of the Lake Mohonk Conference. 1907. Pp. 200.

Jordan, D. S. *The College and the Man.* Pp. 78. Price, 80 cents. Boston: American Unitarian Association. 1907.

Jordan, David Starr. *The Human Harvest* Pp. 122. Price, $1.00. Boston: American Unitarian Association. 1907.

In this little volume President Jordan, of Leland Stanford, combines two popular lectures which deserve attention for literary style and form. If it be recalled that the author is one of the most eminent biologists of the country his subtitle, "A study of the decay of races through the survival of the unfit," becomes significant. The book calls attention to certain factors in human life which may easily be underestimated, but which are of fundamental importance. The "survival of the unfit" is a serious menace to civilization. Can it be stopped? Professor Jordan thinks so.

Kirkup, Thomas. *An Inquiry into Socialism.* Pp. 216. Price, $1.75. New York: Longmans, Green & Co., 1907.

Students of socialism will welcome the re-appearence, in revised and enlarged form, of Kirkup's standard little manual, which has been out of print since 1890. It is an unpretending, sympathetic, eminently fair exposition of the claims of a reasonable socialism, a statement and discussion of the objections to such a policy, and a consideration of its place and prospects in the democratic society of the twentieth century. Accordingly it will please neither the hide-bound individualist who learned his economics in the pre-Victorian era, nor the doctrinaire socialist who believes in the plenary inspiration of Karl Marx: but it may be cordially recommended to everyone who wants to understand present-day socialism of the less extreme type. While the author makes no attempt to cover the same ground gone over in his admirable "History of Socialism," he puts the socialistic movement in its proper perspective by an introductory account of the rise and the character of capitalism. Many readers will doubtless think Kirkup unduly favorable to socialism, but after all, we have passed the point when it seemed worth while to quarrel over names, and should be ready to discuss every social policy on its merits. Kirkup's book is an honest and successful attempt to discuss socialistic ideas in that way.

Kroeber, A. L. *The Religion of the Indians of California.* Pp. 37. Price, 50 cents. Berkeley: University of California Press. 1907.

Labriola, Antonio. *Socialism and Philosophy.* Pp. 260. Chicago: Charles H. Kerr & Company, 1907.

The book consists of a number of letters written by the author to a friend. Its style is, on the whole, very entertaining and makes remarkably easy reading, when contrasted with many books dealing with similar topics. However, there is not sufficient connection between the various letters to permit the reader to feel that he is reading a book but rather a number of short dissertations on several rather diverse topics. Some of the earlier letters are brilliant in conception, and the statements of theory are remarkably clear.

The first letter touches a vital chord in its description of the ambition which the average writer on socialism entertains of getting the ego before the theory. The second letter is an attempt to show the importance of having the work of Marx and Engels clearly understood by the general public and particularly by students of socialism, who are often deceived by misrepresentations concerning what Marx and Engels actually did say. Chapter four is devoted to a discussion of the possibility of starting a school of materialism in France. Chapters five, six and seven deal in a very general and indefinite manner with the relation between philosophy and socialism.

Either the title of the book is unfortunate, or else the author forgets the subject on which he is writing, for only two or three letters fall naturally under such a title as "Socialism and Philosophy," and, on the whole, the book will not place the theory or practical workings of socialism in a more favorable light before the public.

Lafargue, Paul. *The Right to be Lazy.* Pp. 164. La Monte, Robert R. *Socialism Positive and Negative.* Pp. 149. Marx, Karl. *Revolution and Counter Revolution.* Pp. 192. Spargo, John. *Capitalist and Laborer.* Pp. 122. Chicago: Charles H. Kerr & Co., 1907.

Four interesting little books dealing with the problems of socialism and similar questions.

"The Right to be Lazy" is a translation by Charles H. Kerr of a most interesting essay presenting the opposition to the ideas ordinarily advanced in modern Anglo-Saxon communities on the subject of work. The author speaks of work as a thing to be dreaded rather than sought. His essay is a plea for the modern member of industrial society who is sold to work, and in his mania for working is forgetting to live and enjoy. The essay carries this idea to an extreme not often seen, and yet it contains a germ of truth which many of the members of our community, particularly in our modern city would do well to note and heed. The essay is strong, well written and interesting, and for the man who is studying modern economic problems well worth reading.

The chief thing in "Capitalist and Laborer" is Mr. Spargo's answer to an attack on socialism. Like all of Mr. Spargo's work, this answer is not brilliant, but honest, direct and dependable. It contains, stated in a very concise form, the main doctrines of the modern socialist.

"Socialism Positive and Negative," by La Monte, is a book of disconnected essays dealing with "Science and Socialism." "Markism and Ethics," "The Nihilism of Socialism," and like subjects. There is no connection between the essays and, on the whole, they do not present as satisfactory a statement of the socialistic doctrines as does Mr. Spargo's book noted above.

"Revolution and Counter Revolution" contains a series of letters written by Karl Marx for the New York Tribune, during the Revolution of 1848 in Germany. For the first time, these articles are collected and printed in book form. While wholly historical, they present a very interesting point of view on the German crisis in the middle of the last century.

This series of books represents an attempt by the publisher to place in handy and cheap form a number of essays dealing with socialism and socialistic problems. The effort is a commendable one and it deserves public support because of the reasonable figures at which the material is presented to the public as well as for the value of the material itself.

Lee, G. W. *The Library and the Business Man.* Pp. 64. Boston: Stone & Webster. 1907.

Législation du Travail. Annuaire de la. Pp. 690. Price, 3 fr. 20 c. Brussels: J. Lebègue & Cie., 1907.

This annual contains the labor legislation which has been passed in the various European countries and their colonies and in the United States during the year 1906. A great variety of subjects are treated: factory legislation, workingmen's insurance, regulation of minimum wage, investigation and arbitration of strikes and lockouts. On examining the contents of the volume one is impressed with the part which the administrative power plays in such regulations in Europe, the so-called "legislation" including both laws in our sense and ministerial and royal decrees.

The availability of any one report of this series is limited by the fact that many of the acts or ordinances are amendatory, and hence must be construed by previous acts which are not given. But the value of the whole is enhanced by the publication of a decennial table which classifies the legislation both by countries and by subjects—the latter being especially interesting.

That there have been some oversights on the part of the individuals making the reports for the several countries, is evidenced by the omission of two Pennsylvania statutes: a workshop act of 1899 and a store-order act of 1901. But notwithstanding such omissions the Belgian *Office du Travail* is making a noteworthy contribution to the subject.

Macrosty, H. W. *The Trust Movement in British Industry.* Pp. xxi, 398. Price, $2.50. New York: Longmans, Green & Co., 1907.

This book is largely devoted to a statement of the facts regarding combinations in England. Under the term "Trusts" are grouped all of the amalgamations and combinations which have for their object the regulation of prices. The volume is a bit disappointing because it represents nothing more than the results which might be obtained by an ordinary legislative commission. Facts it presents, and to spare, but they are scarcely digested, and no definite conclusions are drawn from them.

As a source of information to the student of the trust movement abroad, the work will be of considerable value, but such work can be equally well done by more cumbersome bodies. The book is hard to read. The paragraphs are long and tiresome. The style is clumsy. We need thought—but that thought must be transmitted by means of good English.

Meyer, H. R. *The British State Telegraphs.* Pp. xvii, 408. Price, $1.50. New York: Macmillan Co. 1907.

Reserved for later notice.

Meyer, H. R. *Public Ownership and the Telephone in Great Britain.* Pp. xviii, 386. Price, $1.50. New York: Macmillan Co. 1907.

Reserved for later notice.

Miyakawa, Masuji. *The Life of Japan.* Pp. 331. Price, $3.00. New York: Baker & Taylor Co., 1907.

This volume is a description of the life of the people of Japan from the popular standpoint by a native of the great Island Empire. The book is written in an interesting style throughout and tells those things which we most want to know about Japan. The daily life of the people, the ideals and standards of their society, the historical reasons for these ideals, the industrial development of recent years, the outlines of the national government, and the recent discussions of a possible American-Japanese war are all considered in an informal, semi-conversational style, which lends special attractiveness to the book. An elaborate series of tinted illustrations setting forth the different phases of the every-day life of Japan give a distinctive tone to each page.

Dr. Miyakawa's object in writing the book is clearly one of which all progressive men of both nationalities must approve, that of bringing the two peoples to a clear understanding of each other, and the work is well calculated to fulfil this object.

Morris, C. *Home Life in all Lands.* Pp. 316. Price, $1.00. Philadelphia: J. B. Lippincott Co. 1907.

Reserved for later notice.

Munro, D. C., and Sellery, G. C. *Mediæval Civilization.* Pp. x, 594. Price, $2.00. New York: Century Co. 1907.

Reserved for later notice.

Neame, L. E. *The Asiatic Danger in the Colonies.* London: S. Roulledge & Sons, 1907.

The keynote of this volume might be given as "all land that can be settled by the whiteman should be kept exclusively for his use." The author writes from South Africa and knows from experience the acuteness of the race and labor problems there. The discussion extends, however, to Australia and the West Indies. His argument is based, he insists, not on color, but on the unassimilability of Asiatic races on account of economic standards of life with which the European cannot compete, and social standards with which he cannot sympathize. South Africa and Australia must be saved as a ground upon which the white race may expand. The West Indies and the tropics in general can well be surrendered to the Asiatics.

New York State Library. Yearbook of Legislation, 1906. Price, $1.00. Albany: N. Y. State Educational Department. 1907.

Osgood, H. L. *The American Colonies in the Seventeenth Century.* Vol. III. Pp. xxii, 551. Price, $3.00. New York: Macmillan Co. 1907.

See Book Reviews.

Parloa, Maria. *Home Economics.* Pp. xii, 416. Price, $1.50. New York: Century Company.

There is, in this country, a steadily increasing interest in home economics. Miss Parloa's book on this subject will recommend itself to all progressive housekeepers as an authoritative hand book. Miss Parloa was founder of the original cooking-school in Boston and is the author of several well-known books. "There seems to be a need for a book that deals with the necessities of daily home life, that teaches the housekeeper the materials and forces with which she has to deal, and the way in which they should be treated. This book has been planned upon this basis. Every statement has been thoroughly tested by the author in the years that she has devoted to the study and experiments which have made this volume possible."

Patten, S. N. *The New Basis of Civilization.* Pp. 220. Price, $1.00. New York: Macmillan Co. 1907.

Reserved for later notice.

Peary, R. E. *Nearest the Pole.* Pp. xx, 411. Price, $4.80. New York: Doubleday, Page & Co. 1907.

Reserved for later notice.

Poorman, C. I. *The Conflict of the Ages.* Pp. 352. Price, $1.25. Bellaire, Ohio: Published by the Author, 1907.

In all ages men have been either oppressors or oppressed, whether as slave and master, or serf and lord, this unnatural condition of society has always been overthrown and succeeded by some other system which likewise contains oppressors and oppressed. We are approaching a crisis with our system of wage worker and wage payer. The thought is emphasized that this idea of change in our present system is not confined to "visionary dreamers" and "pessimistic fault-finders."

In dealing with the trusts and their influence upon the development of the country, the author takes a very pessimistic view. Fully half of his book is devoted to this subject,—and many interesting facts are presented regarding trust oppression and trust methods which will be new to most readers. Omitting the benefits derived from large-scale production, the author deals only with the wrongs which have arisen from the unjustified use of the power by large corporations

The book concludes with statements showing how the reign of Christian socialism can be brought about by a peaceful revolution. It is free from bitterness or prejudice, strongly written, and based upon a group of new and well-arranged facts.

Pratt, E. A. *German versus British Railways.* Pp. 64. Price 1s. London: P. S. King & Son. 1907.

Pratt, E. A. *State Railways.* Pp. 107. Price 1s. London: P. S. King & Son. 1907.

de Quesda, G. *Arbitration in Latin America.* Pp. xiii, 136. Rotterdam: M. Wyt & Zonen. 1907.

Richards, R. C. *Railroad Accidents: Their Cause and Prevention.* Pp. 111. Boston: The Association of Railway Claim Agents, 1907.

The author presents in a very interesting way the question of railway accidents, his purpose being to render them less frequent and less severe by calling the attention of railroad companies and railroad employees to their really serious character and to the fact that in a great proportion of cases they are easily preventable by the exercise of a little care. The book is a small one, somewhat technical, and written from the standpoint of a person who understands railroading.

It divides accidents into four classes. First, those unavoidable, or those caused by the act of God, or the public enemy; secondly, accidents to passengers and other outsiders due partly to their own negligence; thirdly, those due to the want of care on the part of the management, and fourthly, those caused by the carelessness or neglect of employees. These various groups are again subdivided, the character of individual accidents pointed out, and remedies suggested in each case.

The author livens up the work by printing a large number of actual instances of accidents to prove his theories. His general conclusion in regard to the cause of accidents is not at all specific, and the remedies proposed are very vague. The book is written for railroad employees rather than the general public.

Ross, E. A. *Sin and Society.* Pp. xi, 167. Price, $1.00. Boston: Houghton, Mifflin & Co. 1907.

See Book Reviews.

Salamond, J. W. *Jurisprudence, or the Theory of Law.* Pp. xv, 518. London: Stevens and Haynes. 1907.

Reserved for later notice.

Schmoller, G. *Jahrbuch fur Gesetzgebung, Verwaltung und Volkswirtschaft.* Pp. 476. Price, 11m. Leipzig: Duncker & Humblot. 1907.

Schuster, E. J. *The Principles of German Civil Law.* Pp. xlvi, 684. Price, 12s. 6d. Oxford: Clarendon Press. 1907.

See Book Reviews.

Smith, A. H. *China and America To-Day.* Pp. 256. Price, $1.25. New York: F. H. Revell Co. 1907.

Reserved for later notice.

Smith, S. G. *The Industrial Conflict.* Pp. 217. Price, $1.00. New York: F. H. Revell Co. 1907.

See Book Reviews.

Snyder, C. *American Railways as Investments.* Pp. 762. Price, $3.20. New York: Moody Corporation. 1907.

Reserved for later notice.

Snyder, Carl. *The World Machine.* Pp. xvi, 488. Price, $2.50. New York: Longmans, Green & Co., 1907.

The Universe is a machine working in consequence of unchangeable laws which operate none the less surely because we fail to understand them. In the machine the earth is an atom.

The author's scheme is an extensive one. He proposes to create a modern, cosmic philosophy based on the researches of modern science. The book under consideration, "The Cosmic Mechanism," is but the first of three volumes. The remaining volumes will deal with "The Mechanism of Life" and "The Social Mechanism." "In a larger sense we may now perceive that the development of a science of the earth and sun and stars, like human development in general, is an integral part of that vast scheme of evolution, of unfolding and becoming, which pervades the world."

Within the past few years considerable attention has been paid to the arguments advanced by the metaphysicists. "There is no matter." "Matter is an illusion." To the author, matter is the foundation. There is but one cause and that physical,—the influence of past development, heredity, the influence of our present surroundings, environment. "The change was slow, the path obscure and difficult. Probably the hardest thing the human race has had put before it to learn was the idea of fixity and consequence; the certitude that one event follows inevitably from another—the notion, as we say, of cause and effect; in Hume's phrase, of invariable sequence; what we have come in latter days to style the reign of law."

The first volume does not relate to man. It treats only of the development of a conception of the Universe. It might well be mistaken for a treatise on philosophy, or in part on physics. As an introduction to the study of the social mechanism, which is baffling so many thinkers, it is able and admirable. The style is clear,—the construction good. The work of Kepler and Galileo is easily made difficult for thinkers and impossible for common men. Of that there is no question. The author has handled theories with marvelous clearness and stated the evolution of our world concepts in a plain lucid manner.

Sociological Papers. Vol. III. Pp. vii, 382. Price, $3.25. New York: The Macmillan Co., 1907.

This volume includes the papers read before the Sociological Society (London) during the year 1906 and the discussions thereof. It is fully up to the standard of the first two volumes. The topics embrace a wide range of subjects, special attention being given to eugenics and biological factors. The writers and their subjects are: Dr. G. Archdall Reid, "The Biological Foundation of Sociology;" W. McDougall, "A Practicable Eugenic Suggestion;" Dr. J. Lionel Tayler, "The Study of Individuals (Individuology) and their Natural Groupings (Sociology);" Professor J. Arthur Thompson, "The Sociological Appeal to Biology;" Professor Patrick Geddes, "A Suggested Plan for a Civic Museum (or Civic Exhibition) and its Associated Studies;" A. E. Crawley, "The Origin and Function of Religion;" Professor R. M. Wenley, "Sociology as an Academic Subject;" G. de Wesselitsky, "The Russian Revolution;" W. H. Beveridge, "The Problem of the Unemployed;" Mrs. Sidney Webb, "Methods of Investigation;" H. G. Wells, "The So-Called Science of Sociology."

Speed, T. *The Union Cause in Kentucky.* 1860-1865. Pp. xxiii, 355. Price, $2.50. New York: G. P. Putnam's Sons. 1907.

See Book Reviews.

Steiner, Bernard C. *Maryland during the English Civil Wars.* Part II. Pp. 188. Price, 50 cents. Baltimore: Johns Hopkins Press, 1907.

This is the completion of Dr. Steiner's series of monographs dealing with the early narrative history of Maryland, a study based primarily upon the recently published "Archives of Maryland." The present number includes an account of events from 1643 to 1649, closing with a description of the work of the famous assembly of the latter year. The author has followed in detail the frequent and confusing changes of government during this period, the Ingle trouble of 1644 and the resultant "plundering time" of the year following, and the constitutional progress made during the administrations of Thomas Greene and William Stone.

As must necessarily be the case, many minor matters, interesting in themselves but of small comparative importance, are included in such a series of studies. It is the function of the author of monographs to bring together all the known details of his subject, leaving to the author of more extended treatments the choice of materials from the monograph. Professor Steiner is doing excellent work in the former of these two fields of labor.

Sumner, W. G. *Folkways.* Pp. 692. Price, $3.00. Boston: Ginn & Co. 1907.

Reserved for later notice.

Terlinden, Ch. *Guillaume Ier Roi des Pays-Bas et L'Eglise Catholique-en Belgique* (1814-30). Two vols. Pp. xxi, 987. Brussels: Albert Dewit, 1906.

This is a scholarly work in two volumes published under the auspices of the department of Social and Political Sciences of the University of Louvain. The first volume deals with the period from 1814 to 1826, and the subsidiary title" The Conflict Between the Church and State" is significant, giving the keynote to that stormy period immediately following the establishment by the Congress of Vienna of the union of Belgium and Holland.

The author writes from the Catholic, and of course, the Belgian standpoint; he frankly states that he sets out to examine the history of the kingdom of the Low Countries from the point of view of the Catholic religion. But this does not necessarily make his work unscientific; much of the material used is new, being drawn directly from the Vatican and other archives. His thesis is that the religious question was one of the leading, if not the first cause, of the overthrow of the Kingdom of the United Netherlands, and hence of the independence of Belgium. After treating the difficulties between William I and the Holy See, the work shows how the conflict resulted in the unexpected alliance between Liberals and Catholics, and this unnatural alliance, the author claims, guaranteed the success of the Belgian revolution. Space prevents an extended review. The work furnishes an excellent treatment of this phase of Dutch-Belgic relations during a period when the two peoples were unwilling mates under the same yoke.

Trevelyan, G. A. *The American Revolution.* Part III. Pp. xii, 492. Price, $2.50. New York: Longmans, Green & Co. 1907.

Reserved for later notice.

Watson, W. P. *The Future of Japan* Pp. xxxi, 380. Price, $3.50. New York: E. P. Dutton & Co. 1907.

Reserved for later notice.

Wendell, B. *The France of To-Day* Pp. 379. Price, $1.50. New York: Chas. Sribner's Sons. 1907.

Reserved for later notice.

Widney, Joseph P. *Race Life of the Aryan Peoples.* Two vols. Pp. xiv, 706. Price, $2.00 each. New York: Funk & Wagnalls, 1907.

A popular account, chronologically arranged, of the movements and developments of all the known Aryan peoples beginning with the old Asian home and tracing the history down even to the latest occupied habitats of the English-speaking peoples. There is practically no indication that there are involved serious questions of fact, on which students are by no means agreed, save in the discussion of the original seat of the Aryans. No authorities are quoted either in the text, footnotes or appendix. The author fully believes that the Aryan is the superior of all other races of men; that of all Aryans the English-speaking groups are, and will be the leaders, while the Americans are to be in the van in the centuries to come. A considerable part of the second volume is given over to superficial consideration of American problems and forecastings of future developments, such as the alliance of all English-speaking peoples and the extinction (or migration) of the negroes. The style of the volumes is bright, the narrative interesting, the facts of the migrations generally accurate. The reader will enjoy the book—the student will wonder where the author gets the evidence for his conclusions and will probably smile at his naïve philosophy.

Wood, W. A. *Modern Business Corporations.* Pp. xi, 358. Price, $2.50. Indianapolis: Bobbs-Merrill Co.

Reserved for later notice.

Wright, H. N. *A Handbook of the Philippines.* Pp. xvii, 431. Price, $1.40. Chicago: A. C. McClurg Co. 1907.

Reserved for later notice.

REVIEWS.

Barker, E. *The Political Thought of Plato and Aristotle.* Pp. xxii, 559. Price, $3.50. New York: Putnam's Sons, Importers, 1906.

A proper perspective of the political thought of the greatest two of the philosophers of Greece demands a review of the work of those who preceded them as well as that of their contemporaries. With this purpose Mr. Barker opens his book with a very clear discussion of the early Greek philosophers and of Socrates, the minor Socratics and the Sophists. The story as told is at once so simple and apparently complete that the reader is in doubt whether the subject matter at hand justifies so consecutive a treatment. Into the story, based on evidence, the author has woven the fruits of modern speculation and criticism upon his subject and the result is an attractive presentation of something which, stripped of the contributions of secondary writers, must always remain a hazy, fragmentary record of development. In a sense, therefore, the book is a discussion of the political thought about the Greek philosophers as well as a presentation of the theories actually attributable to them. With this qualification it is just to say that the work is admirably done.

To the political thought of Plato the author devotes three chapters, to that of Aristotle seven. The comparisons between the two philosophers will impress some readers as not always well chosen. Plato is considered above all a practical reformer, his writings were intended as projects for actual social reform. Aristotle was a speculative genius, a theorist interested rather in the co-ordination of all human knowledge than in the people around him. And again, "Aristotle wrote the 'Politics,' but Plato is the great political thinker of Greece" (p. 184).

There are numerous passages to which many political scientists would raise objection not only in criticism of the author's interpretation of his subject, but in some cases of his use of terms. An example of the latter is the following: "To Aristotle . . . citizenship means direct participation in the exercise of sovereignty. It does not mean as it means to-day, the right to share in the election of the sovereign." Is it true that citizenship, as at present conceived, means ability to partake in the choice of a sovereign? Most political scientists would surely, if forced to decide between the two definitions given, vote that the one ascribed to Aristotle is more in line with present thought than the one given by the author. Instances of this character could be easily multiplied.

But as a whole the book is a creditable production of an earnest scholar. Its style is excellent—it is much more readable than the average work dealing with political theory. Perhaps the best summary that can be made of the volume would be: It is a good book on theory which an average man can read.

CHESTER LLOYD JONES.

University of Pennsylvania

Cambridge Modern History. Volume X, The Restoration. Pp. xxix, 907. Price, $4.00. New York: The Macmillan Company, 1907.

The treatment of the nineteenth century by the "Cambridge Modern History" very naturally gives rise to new difficulties to editors and authors alike. Apart altogether from the difficulties arising from the nearness of the historian to the events he is treating and the consequent difficulties of obtaining a proper perspective, there is the problem of the enormous volume of the material, which is in the main unorganized, and which has not yet been subjected to critical examination by the trained historian. Under these circumstances the monographic plan of the Cambridge history has here even greater advantage than in previous periods. In a new field of history the work of the specialist is of greatest value, and it is therefore with particular expectation that students have awaited the volumes of this great historical work on the last century.

That the volume before us meets our expectations as fully as we had hoped, is not true. There are excellent monographs, with plenty of detail, often coupled with a broad grasp of the subject, and a power of interpretation that is very illuminating. Among these is the second chapter by Professor Bourgeois, the one on the "Orleans Monarchy," though one might quarrel with the over-emphasis of ministerial history at the expense of a more extended treatment of the tantalizingly suggestive allusions to great economic and social changes. We are told of the practical legislation to aid the industrial transformation, of the laws concerning a system of French railways, education, internal communications, the army, etc., but not a word of the features of these measures. And surely these are of equal importance with the much discussed, but very doubtful influence of Louis Philippe in laying the basis of his rule. "With a happier inspiration than that of the Parliamentary party, who would have compromised everything by premature repression, Louis-Philippe had himself laid the foundation of his monarchy" (p. 484). But if Professor Bourgeois is a sinner in this respect, others are so to a much greater extent. The Congresses and the Eastern question are treated by W. Allison Phillips, whose special studies in this field give to his three chapters the stamp of authority. But there is too much made of negotiations and of the motives of individuals. Is it not time to emancipate the history of the nineteenth century from this undue emphasis of diplomatic relations? The very excellent chapter by Professor Clapham, of the University of Leeds, on "Economic Changes" is no excuse for the extremely political nature of the treatment of so many of the other chapters. Professor Clapham's contributions will be of especial interest to readers of THE ANNALS. The latter half of the chapter affords an excellent survey of the economic changes on the continent, corresponding to the industrial revolution in England. Of great interest and even more timely is the work of F. A. Kirkpatrick, M. A., in two chapters on "Spanish America," and the establishment of its independence. In the extended bibliography on these topics Professor Bourne's excellent work on Spain and America and Dr. Paxon's scholarly book on the Independence of the Spanish-American Colonies, are conspicuous by their absence. Mr. Bennian's short chapter (ten pages) on Canada would be of greater interest if it were not so much abbreviated. Of foreigners contributing, there are, besides Bourgeois, already mentioned, Professor Segrè, of the University of Rome, on Italy; Professor Altimira, of the University of Oviedo, on Spain; and Professor Askenazy, of the University of Lemberg, on Russia and Poland.

The history of the German Federation from 1815 to 1840, is well done by Professor Pollard, of the University of London, but there are curious omissions in the bibliography. For example, on the Zollverein we find no mention of source material, not even for the text of the law and the treatise. This is the more conspicuous because of the report made by Mr. Bowering to Parliament in 1840, giving in translation nearly all the important documents on the question. Mr. Temperly, Fellow of Peterhouse, not "of fellow Peterhouse" (p. xx), gives what seems to me an able presentation of a well-known period of English history from 1815 to 1833. The first half of the treatment reveals an intimate knowledge of the foreign policy. Mr. Gooch, of Trinity College, continues the account to 1841 in a good chapter on Great Britain and Ireland. The chapters on the literary movements, one on "Literature in Germany," the other on "The Revolution in English Poetry and Fiction," are novel features of the volume, but of greater interest to the readers of a journal of politics and economics is the chapter of Professor Nicholson, of the University of Edinburgh, on "British Economists."

William E. Lingelbach.

University of Pennsylvania.

Casson, Herbert V. *The Romance of Steel.* Pp. xiv, 376. Price, $3.50. New York: A. S. Barnes & Co., 1907.

The character of this book is best told in the words of the author's preface—"the first popular history of our greatest American industry." "The wonderful story of steel," continues the author, "is here told in such a way that those who have no technical knowledge of steel making may enjoy and appreciate the miracles that have been accomplished." Though written "after the manner of fiction, the facts have been gathered from the highest authorities."

The rise of Carnegie, Frick, Phipps, and a dozen other steel magnates, the story of the Superior ore ranges and the tales of Pueblo and Birmingham are chapters which will appeal to everyone who ever saw a steel rail or a blast furnace.

The book is all that the author claims for it. It is decidedly readable, despite an occasional complication of biographies. The title, however, may prove misleading. The person seeking a scholarly, or even complete, history of the iron and steel industry in this country will certainly be disappointed at the brief mention accorded the early history of iron making. Less than ten pages out of nearly 400 are allotted to the iron industry from 1622 to 1847. Briefer biographies of some of the "thousand millionaires" could have made way very profitably for a more thorough historical setting. A millionaire is said to have a fascination for the average American mind, but at times Mr. Casson's eulogies detract from, rather than add to, the value of the book from the standpoint of interest in steel and its history.

The volume is essentially a history and eulogy of the United States Steel Corporation, or, as we read in one place, "a story of money makers." Mr. Casson appears to have nothing but commendation for this gigantic industrial combine and its individual members. The final chapter forecasts a glowing future for steel in every field of activity, as glowing as could be expected from the most optimistic operator himself. The book is to be heartily recommended to all who would know the manner in which America's greatest industry came to be controlled by a relatively small group of men. The commercial, industrial, social,—in fact the entire body of the economic relations of the steel business are barely touched, the "money makers" and the "thousand millionaires" evidently having proved the more engrossing part of the romance.

Walter Sheldon Tower.

University of Pennsylvania.

Doyle, John A. *English Colonies in America.* Volume IV, The Middle Colonies; Volume V, The Colonies under the House of Hanover. Pp. xxxii, 944. Price, $3.50. New York: Henry Holt & Company, 1907.

The appearance of the final volumes of Mr. Doyle's history of the English colonies in America marks the completion of a work the first volume of which was issued a quarter of a century ago. The author's death, following within a few months of the publication, awakens a peculiar interest in these volumes and naturally suggests a brief résumé of his work on American history. Probably no Englishman of his generation has evinced greater interest in American colonial history or written so extensively in this field. His earliest work, the Arnold prize essay at Oxford dates back to 1869. In addition to his chief work, and his frequent notes and reviews of books on American history in the *English Historical Review*, his most notable contribution is the chapter in the seventh volume of the "Cambridge Modern History" on the American colonies. It would appear, however, that Mr. Doyle pursued historical work as an avocation, a mere incident of his life as a gentleman farmer and sportsman.

Of his earlier volumes in this series, the first was devoted to the Southern colonies from their settlement to the close of the reign of Queen Anne, and the second and third to the New England colonies during the same period. While his pages were frequently marred by minor errors, in general his narrative was regarded as trustworthy and as presenting in the main a true picture of the times.

Finally, after an interval of more than twenty years, a period so long in fact, that it was supposed by many that Mr. Doyle had permanently abandoned his task, the concluding volumes were finished. The student of colonial history will be curious to note whether the new volumes reveal a more mature scholarship and a firmer grasp upon his subject.

It may be said at the outset that Mr. Doyle has followed the same general plan as in his earlier volumes. In Volume IV the Middle Colonies are treated up to 1714, in conformity with his history of the Southern and New England Colonies. Six chapters of this volume, or about two-thirds of its contents, are devoted to New York, two to New Jersey and a single inadequate chapter is allotted to Pennsylvania. The final volume covers the colonies under the House of Hanover from 1714 to 1760. Here, instead of adhering to a continuous narrative of the colonies according to their geographical grouping, Mr. Doyle essays to consider the colonies as a whole, treating their history topically in chapters dealing with special subjects, such as the general condition of the colonies at the opening of the period, their administration, their economic progress, their religious, literary and educational development. The volume concludes with a careful account of the colonization of Georgia and a summary of the events of the French and Indian War.

While Mr. Doyle's treatment of the Middle Colonies is fairly systematic, it follows traditional lines and is not based in all cases on the latest authorities. Its proportion is open to criticism, and like the early volumes, the strict adherence to a geographical classification precludes any scientific or thoroughgoing comparison and study of colonial institutions, so necessary to an understanding of later American constitutional history.

The final volume is the least satisfactory of the set. In his attempt to treat the colonies as a whole the author fails to acquire a continental grasp, and contents himself with a topical narrative along conventional lines which at best is very incomplete. One especially misses any systematic account of the development of British imperial policy and the administrative control of the colonies. To illustrate, there is no adequate discussion of the navigation acts, or the commercial policy of Great Britain. The functions and manifold activities of the board of trade are not presented. The increasing interference of Parliament and the executive department of the British government in the internal affairs of the colonies is not sufficiently brought out. Narratives of the conflicts between the colonial legislature and the royal and proprietary governors are given, but there is no clear presentation of the general policy of the imperial government. This neglect is the more surprising and disappointing in view of the emphasis which has been placed upon these phases of colonial history by recent American authors.

It is apparent that these obvious omissions are due in part to Mr. Doyle's adherence to the older view of the scope of colonial history. His source material while good, has been inadequate. He has relied upon the older standard histories, such as Broadhead's New York and Proud's Pennsylvania, together with the published records of the several colonies, and to a limited extent upon the printed volumes of the Calendar of State Papers, but only in rare instances has he consulted manuscript archives.

In addition to other shortcomings the author's work is marred by a decided inaccuracy of detail. There are also many instances of carelessness and lack of consistency in the citation of references in the footnotes. A few examples of some of the most conspicuous of these errors must suffice. American geography, so troublesome to English writers in general, has proved to be none the less so in this case. Thus we are informed that the Piscataqua separates New Hampshire from Massachusetts; that Onondaga county is the district which is now Vermont, that the New York-Connecticut boundary line lies twenty miles north of the Hudson, that Flatbush is at the southeast end of Long Island, that Elizabethtown is located on the Delaware. New Netherland is invariably spelled New Netherlands. The celebrated Philadelphia lawyer, Andrew Hamilton, is referred to as Alexander Hamilton; and Jonathan Belcher is incorrectly named Andrew. To the colony of New York is erroneously given the credit of having first asserted the right of self-taxation. The Pennsylvania Charter of Privileges of 1701, we are told, made no modification of any constitutional importance, although in fact it changed the whole status and character of the council in its relation to the assembly.

With all their shortcomings these volumes possess many redeeming qualities. They contain a readable narrative of facts, impartially presented and frequently enriched by well considered judgments and reflections. Mr. Doyle has been happy in his characterization of men, as instanced in his realistic pen portrait of Stuyvesant and his sympathetic estimate of Penn.

Viewed as a whole these volumes present an essentially truthful, although not a complete, account of the internal development of the colonies. Their chief deficiency is in their failure to adequately present their history in relation to the rest of the empire. The final judgments of Mr. Doyle's history, we believe, will pronounce it a highly useful but not a scientific and indispensable work.

Herman V. Ames.

University of Pennsylvania.

McBain, H. L. *DeWitt Clinton and the Origin of the Spoils System in New York.* Pp. 161. Price, $1.50. New York: Macmillan Company, 1907.

The name of DeWitt Clinton is usually connected with all that is debasing and corrupt in the distribution of patronage in New York. With his advent to power in the politics of his state by the turn of fortune in 1801, he is charged with cleaning all the offices of federalists to make way for republicans, that for his own self-interest the adherents of rivals within his own party were excluded, and that he was guilty of nepotism. From such imputations it is the express purpose of this paper to clear the name of DeWitt Clinton. It is a curious fact that at least half a dozen scholars and historians of eminence and ability have uttered these charges without any regard to the story the source material might tell. And this source material has not been inaccessible.

This monograph is based on the manuscript files and minutes of the council of appointment in whose hands lay the patronage of New York, also on the public papers of both George and DeWitt Clinton, on the legislative journals with a judicious use of contemporary newspapers and pamphlets. To show what precedent there was and to what extent DeWitt Clinton departed from precedent, an account is given not only of the history of civil service in the state prior to 1801, but also in the national government.

The writer clearly shows by adequate evidence that in both state and nation "every feature of DeWitt Clinton's plan of parceling out the patronage of the state found some authority in the practice which had preceded him" (p. 13). In New York State the federalist council of appointment under Governor George Clinton practiced a policy of exclusion toward opponents and a similar policy was adopted when the federalists rose to power under Jay in 1795. In 1801 the republicans were victorious in both state and national elections only to find all the offices in the hands of their political opponents. It was inevitable that with a change of party should come a change in office holding. DeWitt Clinton practiced no new system in using the patronage for party ends. It had been an inveterate practice of English politics.

Further, the evidence plainly shows that DeWitt Clinton did not exclude all political opponents. His policy was to grant the larger offices to republicans, and to divide the smaller between the parties in proportion to their respective numbers, and this plan was put into practice. Neither did he exclude the adherents of Burr, but places were found for some of this rival's closest adherents. On the charge of nepotism it is curious to note the writer shows that in every case where his relations held office, it was by election and not by appointment. Besides setting the fame of DeWitt Clinton in a new light, the monograph is also valuable as giving a splendid account of the early development of civil service in both national and state government. In point of style and lucidity the writer is to be commended. It is readable, a quality which cannot always be predicated of a doctoral dissertation.

WINFRED TREXLER ROOT.

University of Pennsylvania.

Osgood, H. L. *The American Colonies in the Seventeenth Century.* Vol. III. Pp. xxii, 551. Price, $3.00. New York: The Macmillan Co., 1907.

In the first two volumes, which appeared several years ago, Professor Osgood related the story of the plantation of the colonies and of their development to a period near the close of the seventeenth century. He took particular pains to distinguish between the corporate and proprietary form of colony, making the distinction clearer, perhaps, than any previous writer had done. The sub-title of the present volume, "Imperial Control," indicates that the point of view now shifts to the other side of the sea.

The first chapter is devoted to the organs of imperial control. In point of law there was no distinction between the realm and the dominions, but the differences in fact were very great. Newly discovered lands vested in the crown, hence the regulation of colonies seemed to be a matter of prerogative. On the other hand, Parliament, being jealous of the prerogative, was some times disposed to take a part, but did not in fact pass more than half a dozen laws for the colonies during this period, and these related to trade. The colonists, acknowledging submission to the mother country, were between two fires. If they denied the prerogative of the crown, they were in danger of falling under the dominion of Parliament.

The development of the imperial system was somewhat slow and irregular. For this there were two reasons, the remoteness of the colonies, and the irregular method of their plantation; and the disturbances in English politics. But, throughout it all the influence of the mercantile idea, that colonies must subserve the material interests of the mother country, is unmistakable. Gradually the policy of bringing the colonies under one system, that of the royal province, and of unifying the control, began to develop. This was not, as some historians have maintained, merely a part of the Stuart policy to rule arbitrarily so much as a matter of convenience in enforcing the trade regulations at the entreaty of the London merchants. The trade acts were not altogether inimical to the colonies, but on the whole, they would have been detrimental if rigidly enforced. The crucial test came in the attempt to consolidate New York and New England and enforce the acts there. But the Stuart throne was already tottering, and with its fall the imperial system for the colonies practically collapsed for the time being.

Nearly all historians state that the trade acts were not designed to raise a revenue, yet they fail to state into what exchequer the incidental revenue was to flow. It is gratifying to note that Professor Osgood has brought this out in the course of the narrative. The reader will find many other details also, some of which are less interesting, but, on the whole, this and the two preceding volumes make a really notable contribution to our colonial history.

David Y. Thomas.

University of Arkansas.

Ross, Edward Alsworth. *Sin and Society.* Pp. xi, 167. Price, $1.00. Boston: Houghton, Mifflin & Co., 1907.

In gathering together the brilliant essays that he has been contributing to the *Atlantic Monthly,* Professor Ross gives us one of those rare books that are really worth while. "New Varieties of Sin," "The Criminaloid," "Sinning by Syndicate"—no one who enjoys clear thinking and vigorous writing can afford to miss these stimulating chapters. "The founder of the Oil Trust may give us back our money, but not if he send among us a hundred Wesleys can he give us back the lost ideals." Thus does the author epitomize the moral havoc wrought by the gospel of success as preached in Big Business. Everyone admits the wickedness of the old personal sins,—lying, cheating, stealing, killing by violence; but public indignation is not yet sufficiently kindled against the franchise grabber, the food adulteror the exploiter of women and children, the neglectful railroad red with the blood of employees and passengers. Their guilt is impersonal, yet it shakes the very foundations of social order; and as Professor Ross protests vigorously, it is against such sins and not simply against personal vices that the thunderbolts of public wrath need to be directed. We could wish that he had laid more emphasis on publicity of great business affairs as a means of making public opinion effective; but one ought not to find fault with so good a book. It well deserves the wide influence invoked for it in the interesting prefatory letter of President Roosevelt.

H. R. Mussey.

University of Pennsylvania.

Schuster, E. J. *The Principles of German Civil Law.* Pp. xlvi, 684. Price, 12*s.* 6*d.* Oxford: The Clarendon Press, 1907.

This is an important contribution to the literature of comparative legislation. Mr. Schuster has compressed within less than seven hundred pages a clear discussion of the latest and greatest attempt made by any nation to codify the entire body of substantive law, and has combined with this discussion a comparison with the English common law wherever the contrast or similarities were so striking as to make such a course of particular value. The book is so arranged that besides rendering this service to the student of comparative law it is also available for use in that numerous class of cases arising out of the rapid expansion of international relations as they affect the individual. The contrast of continental and English law is brought out in such a way that misunderstandings can be made less frequent and cases of the conflict of laws can be more easily adjusted. These comparisons are carried through the whole field of law, bringing out the differences of practice—to illustrate with examples—upon the validity of marriages, the effect of marriage on property, the rules as to settlements and trusts, the nature and effect of wills, etc.

Mr. Schuster is to be congratulated upon the care taken in the nomenclature used. Evidently no pains have been spared to get exact translations of the terminology of the codes, and where no English equivalent is available the distinction between the similar English word used and the German word is always carefully brought out. This has been by no means an easy task, for the language of the codes is so highly technical that exact translation is often all but impossible.

A short historical sketch preceding the main discussion gives an idea of the chaotic condition of German state law, which was superseded by the imperial legislation culminating in the adoption of the code in 1900. German private law now consists chiefly of the civil code and the commercial code, both of which overlap so that both must be consulted to find the law on any subject. In turn they are rounded out by numerous additional statutory supplements. The ground work of the codes is the Roman law with additions from the "common law" developed in Germany, and other provisions of entirely modern character. So far as possible the language used is simple, though the intent has not ruled the outcome as much as was hoped. The methods of expression and interpretations adopted, it is claimed, admit of adaptation to new conditions, thus obviating the stock objection to a code as a body of "dead law." But no doubt this wide margin, now left to judicial discretion, will gradually disappear and the decisions will build up a new customary law. This, however, should not blind us to the fact that though not a work of permanence, codification works for the definition of principles as opposed to the casuistic irregularity so often fostered by the absence of any co-ordinated body of law.

CHESTER LLOYD JONES.

University of Pennsylvania.

Small, Albion W. *Adam Smith and Modern Sociology.* Pp. ix, 247. Price, $1.25. Chicago: The University of Chicago Press, 1907.

This book is a fragment of a more complete study of the relations between nineteenth century social sciences and sociology, according to a statement in the preface. This first volume undertakes to prove the following thesis: "Political economy, as viewed by Adam Smith, was the technology of a practical art which was strictly responsible to a moral philosophy that correlated all human activities. Political economy, after Adam Smith, lost its sense of connection with the large moral process, and became the mystery of the craft of the capitalizer. We propose an inspection of Adam Smith's economic system, for the purpose of showing that in his mind there was no antithesis, still less a divorce, between economic technology and sociology; and that the organization of the two in his philosophy rested upon a general conception of the subordinate relationship of all specific activities within an inclusive moral system, to which, in effect, though not in detail, all students of society must ultimately return."

Probably most careful students of Adam Smith, taking account of the "Theory of Moral Sentiments" as well as the "Wealth of Nations," will admit that the great apostle of individual liberty was first a moral philosopher, and only secondarily an economist. This idea Professor Small develops in his own peculiar terminology, making abundant citations from the "Wealth of Nations." Adam Smith's social, or as our author prefers to call it, sociological point of view, is contrasted with that of the classical economists, who were so intent on increasing production as to forget that more wealth is worth while only as it means increased welfare; and that welfare depends quite as much on just distribution as on increased production.

The most interesting chapter in the book is that on "The Economics and Sociology of Labor," which contains a suggestive criticism of Adam Smith's use of the slippery word "natural," and our use of the equally elusive "normal." To assume that competition or the private ownership of land and machines, or any particular feature of the present system of distribution, is "normal," is to incur the danger of the question-begging epithet, no matter how carefully one may define his terms. Professor Small maintains that there is a fundamental difference between claims to material goods based on labor, and claims based on conventionality, the former being essential, the latter only institutional. We are unable to agree that labor itself constitutes a valid claim to income, as the argument of the book seems to indicate. Income from labor, no less than that from property, must justify itself on the ground of social utility.

To return to the argument of the book, economics is a purely technological discipline, judging conduct solely with reference to its effects on wealth. It furnishes an indispensable part of the data for that larger moral judgment which it is the special province of the sociologist to make, and which has for its criterion social welfare or progress. The claim advanced for sociology is not a particularly new one, but it is presented in a rather striking fashion. If one may judge at all by the recent literature of economics, however, the economists have no idea of letting themselves be shut up within the narrow bounds here laid down. Dispute as we may over names, the cheering fact remains that we are all beginning to study the social sciences from the viewpoint of human welfare.

H. R. Mussey.

University of Pennsylvania.

Smith, Samuel G. *The Industrial Conflict.* Pp. 217. Price, $1.00. New York: Fleming H. Revell Company, 1907.

This study, by a member of the department of sociology in the University of Minnesota, is said by its author to differ "from all that has been written upon the question, in that it is not based upon a theoretic, but a real world, and, instead of seeking to serve some theory, endeavors to show the actual grounds upon which the whole subject rests, and, rejecting both matters of method and incidental questions, to set in a clear light the issues involved" (p. 8). Two chapters consist of reprints of letters received from labor leaders and employers. In the discussion of these letters, the author emphasizes many of the elementary truths of political economy in a readable manner, and even for those who have some acquaintance with the literature of the labor question, it may be convenient to have the demands of employers and employed brought together in one place. In the chapter on the "Three Parties in Interest" it would have been well to analyze the concept of "the public," viewed as a distinct group from employers and employed. In the final chapter socialism is judged adversely. Dr. Smith asserts that under socialism the management of industry would be either by a caste system the worst the world has ever known or else by the general average of intelligence, which would check production. There would be no incentive to the individual to put forth all his powers. Finally he rejects socialism because it is an assault on the family and is anti-patriotic. The attempted distinction between political and economic socialism is not clear.

M. O. LORENZ.

University of Wisconsin.

Speed, Thomas. *The Union Cause in Kentucky.* 1860-1865. Pp. xv, 355. Price, $2.50. New York: G. P. Putnam's Sons, 1907.

No part of the history of the Civil War is more deserving of investigation than that played by the border states. Up to the present time, however, the internal history of these states has been inadequately presented, especially the part played by the Union men in keeping these states from joining the Southern Confederacy.

It is with these convictions that Captain Speed has prepared the present volume. While much has been written to celebrate the deeds of those Kentuckians who went into the Confederacy he believes that the services of the Kentucky Unionists have been underestimated and misrepresented. The truthfulness and fairness of the author's account is testified to by Justice John M. Harlan, of the United States Supreme Court, in an appreciative introduction. Both Justice Harlan and the author call attention to the fact that even as able and unprejudiced a writer as the late Professor Shaler, of Harvard, in his history of his native state has gravely erred and given currency to a gross misconception, when he wrote that "the Blue Grass region sent the greater part of its men of the richer families into the Confederate army, while the Union troops. . . . came in greater abundance from those who dwelt on thinner soils," and that the former were as a whole, "a finer body of men than the Federal troops from the commonwealth." Captain Speed refutes this statement in Chapters VI and XI by marshaling a long list of Union leaders from prominent families and by a comparison of the records of the Union and Confederate troops from

Kentucky. The author claims to have drawn his facts from documentary sources, and an examination of his references seems to confirm his statement. In some respects, however, the work does not meet the expectation aroused by the preface. Instead of being a well-balanced continuous history, it consists of a series of chapters of a more or less fragmentary character, and some times introduces matter that is hardly germane to the subject. About two-thirds of the volume is devoted to the opening year of the war, and there is no consecutive account of either the military or civil affairs within the state during the, remaining years of the period. We especially regret the omission of a review of the attitude of Kentucky on the abolition of slavery.

The absence of an index and the citation of references in the text are decided blemishes in the make-up of the volume. Captain Speed's work, while not comprehensive, corrects several misconceptions and throws important side lights upon some hitherto neglected phases of the history of perhaps the most important of the border states.

HERMAN V. AMES.

University of Pennsylvania.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY.

WASHINGTON, *November 29, 1907.*

MY DEAR PROFESSOR ROWE:

It is a matter of keen regret that I am not able to be with you at your meeting, but the pressure of my duties here just at this time is so great that I am sure every one will understand why I am unable to attend. I observe from the list of speakers that the Treasury Department will be ably represented in the persons of the Treasurer of the United States and the Comptroller of the Currency. These and the other speakers of the evening, who are men of deservedly high prominence in the banking and business world, will surely make the meeting a notably interesting and instructive one for those who are so fortunate as to be present.

The financial situation is, of course, engaging the earnest attention of our people. The attitude of the Treasury Department is and has been that of extending all possible relief and of using every means within its power to help all sections. Its readiness to go to the utmost in this direction has, I think, been amply evidenced—if further evidence were needed—by the events of the past few days. The measures that have been taken from time to time by the Department, and by bankers and business men acting in cooperation, have greatly alleviated the severity of the stringency, and, with the continued support of our patriotic citizens everywhere, I look for the immediate future to bring even more gratifying results.

The influence of such organizations as yours, through meetings like the one you are holding Monday evening, can be made very helpful in the direction of enlightening public opinion, in restoring confidence and in maintaining our prosperity.

With congratulations and best wishes for your members and their guests, believe me,

Very sincerely yours,

GEORGE B. CORTELYOU.

Prof. L. S. ROWE, President,
American Academy of Political and Social Science, West Philadelphia, Pa.

THE PANIC AS A WORLD PHENOMENON

By Frank A. Vanderlip,
Vice-President National City Bank, New York.

It might very properly be urged that the present is too early a date for us to draw wise conclusions from the lessons of the recent financial crisis. Indeed, one can hardly speak of it, as I did just now, as the recent crisis. It is the present crisis. If we are not well in the midst of it, we at least continue to be surrounded with many unpleasant features that have formed a part of that crisis. We are still in a situation where a great majority of the banks of the country have practically suspended cash payments.

Domestic exchanges are still seriously disorganized. After the most heroic measures for relief, taken by the Treasury and by banks generally, we continue to be surrounded by abnormal conditions, and the day is somewhere in the future when we can look back with anything like academic interest and comment with intelligence on the true lessons which have been taught by this extraordinary financial event.

Although it may be too early to speak with certainty about these lessons, there is good excuse to give consideration to the phenomena of the crisis, even at as early a date as the present. Sufficient excuse may be found in the profound necessity which exists for an understanding of the causes and a comprehension of the principles which must underlie proper remedies for such a financial panic. There has never been a time in our political history, I believe, when there was more necessity for a broad educational movement in relation to financial affairs, than at the present time. The necessity for education so that the public will comprehend the underlying principles governing sound banking and a proper currency is as great to-day as was the necessity for education in regard to the standard of value ten years ago.

The causes of the remarkable financial disturbances which we have been experiencing are more or less obvious. Still, men are not agreed upon them nor upon the varying degree of importance that should be allotted to those causes that are obvious. Some men will trace the roots of the trouble to the policies of the President of the United States. Some will trace them directly to the activities of the "gamblers" of Wall Street, as they choose to call that portion of the community. Now the truth lies at neither of these extremes nor indeed does it lie between them. It is much broader, deeper and more comprehensive than either of these suggestions.

If I were to attempt in just a word to outline the causes as I see them, I should say that we must run back for some of the roots to the terrific losses which the world's capital experienced as a result of the Boer War, costing as it did one billion of dollars, the Japanese-Russian War, which cost one and one-quarter billions, and the losses of the San Francisco disaster, which footed another half billion. Here we have figures of nearly three billions of dollars direct loss to the world's capital. That loss too, came at a moment when the world was just entering upon a most intense industrial activity, an activity which created what was, I presume the greatest demand for capital that the world has ever known.

The world has thus, in an unprecedented degree, been using of its liquid capital. We have seen railroads and other corporations inexorably pushed to build new lines, to add to their equipment and to extend plants. But although the corporations were forced to make these expenditures by the demands which broadening industry and growing commerce made imperative, they became at last, owing to the exhaustion of the world's investment fund, unable to sell securities to provide money for their forced expenditures. They were unable to sell bonds, even though the security that was offered was wholly above criticism. The investment capital of the world became well nigh exhausted. That phase of the situation was by no means confined to America. It was international in its origin and world-wide in its effect.

This financial crisis, however, has by no means been altogether a matter of money. It has, in large measure, been a matter of what was in men's minds. I would again go back a few years in search for the roots of our present difficulties and note that we have had a period of so-called "muck raking." A period in which there has been the most general criticism of leaders, both financial and political. Now, to tell the truth, we have had a good deal of honest reason for criticism; at the same time, it is unquestionably true that much of the criticism has been unfounded. There has, however, been brought forward evidence enough to show that no small measure of criticism was merited.

The financial world approached the fall months of 1907 with a situation in which investment capital was practically exhausted and at a time when the confidence of the people in financial leaders had been severely shaken. It was not alone the confidence of the people in financial leaders that had been shaken, however. The confidence of the financial leaders, the confidence of investors and of men who control capital had been shaken in the people. The confidence of those men, in the wisdom of legislation, in the fairness of legislators, in the high-mindedness of courts and in the right spirit and justice of public opinion, has been seriously shaken. We approached these fall months then with a situation where confidence was lost on the part of the people in the financial leaders and was shaken on the part of those who directed large corporate affairs, in the stability of conditions such as only an honest and fair public opinion can insure.

We approached these months with a banking and currency situation in which any withdrawal of money from the banking centers, even such a withdrawal as comes with the ordinary legitimate demands for the crop movement, meant, because of a bad banking and currency system, a withdrawal of reserves from the banks. We approached these trying months with a currency system which had in it no expansive element. If more circulation were to be needed, there were only three places it could come from. It might come from abroad in the shape of gold imports, it might come from the treasury in the form of additional public deposits, or failing a sufficient supply from these two sources, it must come from the reserves of the banks.

We have been preaching about the necessity for an expansive currency for years. We have now had an illustration of the need of it, an illustration of the danger which we run to be without it, which is going to go farther to convince the people that we require legislation, than have all the meetings and all the addresses which have been made on this subject in a great many years.

Of course, if one were to trace more minutely the causes of the financial upheaval, he might find the direct, immediate cause was intimately related to trust company development. A great number of trust companies have been organized in the last few years. Bank depositors have been very greedy to obtain high interest rates. The trust companies, with small reserve requirements, were in a position to pay higher interest rates than did the commercial banks. In some cases they paid rates that were too high, and in order to pay such rates they engaged their capital in a way which was not the most conservative. That made the situation such, taken in connection with the general shock to confidence which I have referred to, that when a breath was raised against the credit of trust companies, it found quick lodgment in the minds of the people and depositors, and made those suspicions promptly felt by large withdrawals of deposits and a considerable hoarding of cash. The hoarding, indeed, was not confined to the people altogether. It soon extended to the banks themselves, and has finally become one of the most important features of the situation. This hoarding of money in excess of their normal reserve requirements, by the banks, is one of the phenomena that will deserve close attention. The remedy for it lies outside the field of an elastic currency.

Now, as we have remarked, it may be rather early for a really academic view of this crisis. Nevertheless, I believe the necessity for a study of the lessons of the crisis is so great, the need for an understanding of these lessons is so pressing, that now, while it is all fresh in our minds, is the best of all times to begin a study of the problems raised.

Recently the newspapers have contained interviews with a large number of senators and congressmen as to the course of probable financial legislation. To my mind it was shocking to read the views of many of the members of Congress. They ran all the way from those members who thought nothing at all was necessary in the way of legislation to those who wanted to have the United States Government guarantee all the deposits in all the national banks and issue $300,000,000 of greenbacks. I am ashamed to admit it, but I presume the truth is that a series of interviews with well-known bankers, interviews with men bearing the most important relation to the country's financial work, would show as great a variation of opinion as did these interviews with members of Congress. I am afraid that the bankers would show, in some cases, as great ignorance of what is needed, and as little comprehension of the principles underlying any really intelligent reform, as our senators and congressmen. That leads me to believe that there never was a time when education of the people in the principles of banking and currency was more seriously needed. The necessity for such education is reason enough for this inquiry into the lessons of the crisis.

The one great practical lesson, of course, is going to be that some form of expansive currency, a currency which will be related in volume to the commercial needs of the country, is necessary. Whether such currency be secured as a result of an extension of the powers of the treasury or by giving the right to all national banks to issue asset currency, or by the organization of a central bank, is one of the questions which a better educated public opinion is needed to answer. Whatever the answer may finally be, there are certain principles which we must learn to recognize and to apply to all discussions of this subject of an expansive currency.

It is, perhaps, fortunate that we have had an illustration of an expansive currency in the issue of clearing-house certificates which have been put out in many cities in the form of circulating notes and which will help many to see more clearly what really is the function of an asset currency.

One of the valuable lessons which we have learned from this financial disturbance is the interdependence of financial centers upon one another. New York had shown evidences of the approaching crisis for several months. There had been disturbances in the stock market, high rates for money, low reserves and other indications of a possible period of strain, but the great West and South, with seven billions of agricultural products, said, "We are independent. We have divorced ourselves from the people of Wall Street. They may have their troubles. We are strong enough to take care of ourselves."

London, Berlin and Paris did not feel the same financial independence that was felt by Oskaloosa and Podunk. Oskaloosa and Podunk believed that the wheels of prosperity would continue to turn for them with unabated speed regardless of what happened in New York. London, Berlin and Paris were deeply concerned over the situation as it was reflected in Wall Street. Now the whole country has come to see that there is no such thing as financial independence. It took hardly twenty-four hours from the disturbance resulting in clearing-house certificates in New York for the difficulties to become national. The West and the South, rich and independent as they are, can now see more clearly that the whole country's welfare is pretty much bound together in a financial way.

Perhaps the most significant of all the lessons of the crisis, one that will, in the end, sink more deeply into our understanding than any of the others, will come to us when we comprehend the full weight of what it means to destroy confidence; what it means to destroy the confidence of the people in the financial leaders, to destroy the confidence of capitalists in the fairness of the people as reflected in legislation and in the decisions of the courts.

THE PANIC OF 1907 AND SOME OF ITS LESSONS

By Myron T. Herrick,
Chairman of the Board Society for Savings, Cleveland, Ohio.

Every American panic has been characterized by very similar events, which have followed each other in like sequence,—about as follows:

(1) Failure of an important bank or institution,—Ohio Life Insurance and Trust Company in 1857; Jay Cooke & Co. in 1873; Mitchell's Bank, and the Erie Railroad in 1893; and the Knickerbocker Trust Company in 1907.

(2) Heavy withdrawal of funds by depositors, and the failure of many financial institutions.

(3) Demoralized stock market,—affecting banks and depositors alike.

(4) Hoarding of money in large amounts, not only by individuals but by banks, and the partial refusal on the part of banks to pay out cash, resulting in a premium on currency.

(5) Large importations of gold,—$15,000,000 in 1873; $56,000,000 in 1893; and over $100,000,000 in 1907.

(6) Gradual improvement in financial affairs, resumption of specie payments, and disappearance of premium on currency.

(7) Acute trade reaction, discharge of many thousands of employees, and realization that the country must pass through a more or less severe industrial reconstruction.

The present financial disturbance apparently had its inception on the 15th and 16th of October, when it was first known that the Mercantile National Bank, of New York, was in difficulty. The embarrassment of this bank was closely connected with an operation in the stock of the United Copper Company. The stock of this company, which had declined severely, because of the fall in the price of the metal, suddenly advanced, in a few days, from thirty-seven to sixty, by reason of an attempt to corner the stock. Unfortunately for the operator who was engineering the transaction, stock which it was supposed could not be delivered was produced, and the firm of brokers backing the deal was obliged to suspend. So far the episode differed little from an ordinary stock market fiasco, but when it was known that the Mercantile National Bank had supplied the funds for the attempted corner and was embarrassed thereby the affair took a more serious turn. The bank was examined, found to be solvent, and help was extended to it. Up to this time the public was not much alarmed, but on Monday, October 21, the Knickerbocker Trust Company, one of the largest institutions of its kind in New York, made an appeal for assistance, which was not granted and the company closed its doors at noon the next day, after a run in which more than $8,000,000 was paid over the counter. The failure of this large company demoralized the stock market. Call money advanced to 70 per cent and many stocks sold at new low records. Depositors in other institutions now began to lose confidence and commenced to withdraw funds. The Trust Company of America and the Lincoln Trust Company, both solvent institutions, were subjected to severe and prolonged runs. In the week following it was estimated that $40,000,000 was paid out by those two companies. At the same time Western banks began to make drafts on their New York depositories and during the week of October 21st, $14,000,000 was sent from New York City to banks in the interior. The withdrawal and hoarding of this vast sum by banks and individuals produced a most acute condition. On October 24th the panic on the Stock Exchange seemed almost hopeless. Call money was practically unobtainable,—only a few loans being made at 125 per cent. At two o'clock, when the demoralization was at its worst, a bankers' pool headed by J. P. Morgan loaned $25,000,000 at 10 per cent,—thus tiding over a situation fraught with the gravest danger. An appeal was made to the Secretary of the Treasury for additional government deposits and gold in large quantities was imported in spite of the fact that the Bank of England, to protect its gold reserve, raised its discount rate to 7 per cent, the highest in thirty-four years. Before relief was obtained from these measures, the reserve of the national banks of New York City had declined to more than $54,000,000 below that required by law. This was the largest deficit on record. Clearing-house certificates were authorized to settle the balances between the banks and a premium of 3½ per cent was paid for currency. The disturbance which, for a time, was confined to New York City gradually extended and banks in most of the larger cities were obliged to use certified checks, clearing-house checks and clearing-house certificates to make up the deficiency in currency caused by its withdrawal from circulation.

At present, so far as the banks are concerned, the situation is gradually improving. Money is being brought from its hiding places and is again finding its way into the bank reserves and the premium on currency has disappeared. The deficit in the reserves of the New York associated banks has been made good and for the week ending January 11th a surplus was reported for the first time since October 26th. The statements just issued, pursuant to the call of the Comptroller of the Currency are, under the circumstances, unusually good, showing most of the national banks to be in normal condition, many of them holding a reserve in excess of that required by law. Two facts evidence the widespread extent and the violence of the panic. The premium on currency continued longer than in any other period in the history of the country and with a single exception it has taken the New York banks longer to repair the deficit in their reserve. One of the most striking features of the panic is the remarkable way in which the banks have stood up under the strain. In 1893, 160 national banks failed, while in 1907 but twenty-one were obliged to suspend, a number which has been exceeded many times in years in which there has not been a panic.

Such, in brief, are the salient features of the history of the past three months. If these facts afford an adequate explanation of the disturbance, and if from them alone we are justified in drawing a conclusion as to its probable length and extent, it would be safe to say that within a few weeks at the most industry would return to the highly prosperous state of a few months since. Such a conclusion, however, is not warranted. The course of the events of the immediate past is undoubtedly but the surface indication of a deeper and more important economic phenomenon. This belief is strengthened because we now know that the striking events of past crises were but outward manifestations of industrial and financial conditions. When the history of the panic of 1907 is written and its significance fully appreciated, it will undoubtedly rank with the epoch-making panics of 1893, 1873, 1857 and 1837. That the sequel will be similar to that following any of these other critical years, is not at all likely, for the immediate circumstances that produce a financial or industrial panic are never the same, and it is these circumstances that determine the direction that the disturbance is to take as well as the duration and the severity of the depression that usually follows.

The periodicity of crises is undoubtedly a psychological phenomenon and is an expression of the rhythmic movement between hope and despair, optimism and pessimism, that has ever characterized society. So long as a man is a creature whose judgment is largely determined by his feelings, we are bound to have recurring periods of prosperity and depression. The form that a crisis in modern times takes is, to a large extent, fixed by the existence of credit in many forms and by the great accumulation of loanable capital. The crisis occurs when credit has been unduly extended and the supply of capital exhausted or so involved in unproductive enterprises as not to be available. In every period of business activity, capital is gradually absorbed, there is a heavy demand for funds for investment in new enterprises. As these new enterprises take form and develop, there arises an increased demand for all sorts of labor, from that of the lowest grade manual labor to that requiring executive ability of the highest order. Prices rise, partly because of the increased cost of production and also by reason of the greater demand on the part of better paid labor. The rise in prices, however, is always out of proportion to the rise in wages and thus the ability to save and create new increments to the store of capital is curtailed. If the absorption of capital is not lessened to meet the diminution in its creation, the time must surely come when the supply of capital is entirely inadequate to the demand and going enterprises are then severely hampered by inability to obtain funds sufficient even for ordinary betterments. It has probably never happened that such a situation is appreciated in time to gradually and easily curtail capital expenditures. It is of the nature of man to be swept along on a current of optimism, overdiscounting the future and investing large sums in enterprises whose present worth is largely overvalued. It is only when the breaking point is reached and the crisis is at hand that men come to a realization that credit is unduly extended and capital exhausted.

Since 1897, the year in which were recognized the first sure signs of the present cycle of prosperity, the train of events has followed pretty closely the lines just indicated. The average of prices in 1907 was higher than at any time in over thirty years. For more than a year past, not only new enterprises, but old well-established industries and railroads have found it almost impossible to obtain the capital requisite to procure the equipment essential, because of the great trade activity. Some time since, many of the important railroads found that the only method by which funds could be secured was by the sale, at a discount, of short time notes bearing an unusually high rate of interest. From 1896 to 1907 the proportion of capital of all national banks to deposits has decreased from $1.00 to $2.46, to $1.00 to $4.82, and the proportion of reserve to deposits has decreased from $1.00 to $5.13, to $1.00 to $6.16. The aggregate resources of all banks was reported in 1897 at $7,822,000,000, and in 1907 at $19,645,000,000. On August 22, 1907, the loans of national banks amounted to $4,678,000,000, the largest total on record. The percentage of reserves to deposits in national banks has shown a constantly declining tendency from 1894, when it stood at 32.7 per cent. to 1907, when it was but 21.33 per cent. In 1896, banks of all classes reported individual deposits of $4,000,000,000, with cash holdings of 10.72 per cent. In 1906, the banks of the United States had deposits of $12,000,000,000, with cash reserves of 8.3 per cent. Moreover, within the past ten years, there has been an enormous destruction of capital. The Boer War, the conflict with Spain, the Russo-Japanese War, the Baltimore fire, and the destruction of San Francisco, involved a waste of capital so prodigious as undoubtedly to weaken the stability of industry the world over. These facts and figures are representative of only a few of the indications of an overstrain on the capital and credit of the country.

If, then, what we have experienced in the few months just past is a real economic crisis, is there anything in the condition and circumstances of the country that would lead us to believe that the depression that always follows such a crisis is to be of a comparatively short duration and of less than usual severity? For the sake of comparison, it is well to take the panic of 1893, inasmuch as the organization of industry and credit at that time was more like that of to-day than at the time of any other crisis in the history of the United States. In almost every respect the country is in better condition than it was fourteen years ago. Possibly the most important factor is the status of government finance. In the six months from January to June, 1893, the excess of government expenditures over receipts was $4,198,000, and during the fiscal year ending June 30, 1894, the excess increased to $69,000,000. It was even necessary to encroach upon the gold reserve for current expenses, and for months this fund was less than caution and prudence demanded. To-day the government has a working balance of something like $200,000,000, and while expenditures are now in excess of receipts, due to decreased imports, the balance in the treasury is so large as to afford a safe margin for falling revenues. The currency of the country is now safely on a gold basis. In 1893, the money of the country was in a chaotic state, because of the coinage of silver dollars under the Bland Act, and of the issuance of treasury notes of full legal tender to pay for the 4,500,000 ounces of silver bullion purchased each month under authority of the Sherman Act of 1890. It was only when the panic was well under way and the harm done, that Congress was sufficiently aroused to repeal the Sherman Act. Even after this pernicious measure had been wiped from the statute books, the sentiment in favor of the coinage of silver was so strong as to unsettle confidence for several years. The apprehension that existed, both in this country and abroad, as to the ability of the government to maintain gold payments, was one of the fundamental and effective causes of the crisis of 1893. This fear led to a rush to realize on all sorts of property before gold should disappear. British and other foreign investors hastened to get rid of their holdings before the distrust became so general as to cause a severe fall in prices. The excess of merchandise exports in 1892 exceeded the imports by $203,000,000, yet so great was the liquidation in securities of this country by foreigners, that we exported more gold than we received, by $495,000 in that year. Too much emphasis cannot be laid upon this point of distinction, that in 1893 we were threatened with repudiation, whereas, in 1907, the whole world has confidence in our ability to pay our obligations in gold. As a matter of fact, the favorable condition of the finances of the government, the stability of banking institutions, and the soundness of our currency and monetary systems, distinguish the panic of 1907 from that of any other in the history of the country. In 1837, speculative prosperity led to an enormous increase in the note issues of the state banks made possible by Jackson's destruction of the second United States bank. Much of this circulation rested on inflated assets, and when the treasury issued its famous specie circular, July, 1836, requiring payment for public lands to be made in specie, the complicated credit structure collapsed. The panic of 1857 was precipitated by the vicious banking systems of the various states. In only a few states was the least attempt made to limit bank note issues or to see that the notes had proper assets behind them and the result was inevitable. The enormous issues of government securities, greenbacks, etc., to carry on the Civil War, resulted in overstimulating industry and unduly inflating prices. The crash came in 1873 when the maladjustment of production to consumption broke down the credit structure already overstrained. In recent times railroads and railroad finance have played an important part in every economic crisis. In the last decade, the increase in the mileage of railroads has been comparatively small and what expenditures have been made have been for the improving and extending of established lines rather than for the building of new roads into sparsely settled and undeveloped territory. The gross receipts of railroads are larger per capita of population than at any other period in the history of the country, and this is true at a time when rates have steadily decreased. There can be no question that our railroads are now on a most substantial basis. In 1894, there were 156 railroads operating a mileage of nearly 30,000 miles, in the hands of receivers,—among them were the three great systems,—Erie, Northern Pacific and Union Pacific. It is inconceivable that any such calamity should overtake us now. Of course, it is unsafe to predict the ultimate effect of the falling off in business on the earnings of railroads, but we do know this, that it was the poverty of the West that caused the railroad receiverships in 1893, whereas, to-day, one of the most reassuring signs is the great strength and stability of the agricultural districts of the West. In 1893, the railroads served a population of 66,000,000. They are now called upon to transport the products of 80,000,000. The world's output of gold has increased from $147,000,000 in 1892 to something over $400,000,000 in 1907, and the fact that the balance of trade is now well in our favor will enable us to secure and retain at least our share of the new metal with which to strengthen our bank reserves. The export of breadstuffs in November was of record proportions, the value being $24,700,000 this year against only $15,416,000 for the same month last year. This is the first panic year in our history when exports exceeded imports. For the year ending June, 1893, the import excess was $18,700,000, and in 1873 and 1857 the import excess was the largest on record. For the fiscal year 1907, exports exceeded imports by $446,000,000, which places us in a very favorable relation to international exchanges. In 1893, the exports of gold coin and bullion exceeded the imports by over $87,000,000. We have had bountiful harvests, and the prices of all products are high. The reverse of the condition obtained in 1893, when cotton was selling for 8 cents, wheat for 70 and corn for 48. The farmers of the country are especially prosperous, they are lenders, not borrowers, as they were fourteen years ago. These are but a few of the circumstances that distinguish the situation of to-day from that of the last economic crisis. The aftermath of the panic is now becoming apparent in the lessened bank clearings which are running about 30 per cent below those of last year. Prices of commodities are already substantially less than they were four months since. Each of the last three months has recorded a decline in the average price from that of the month preceding, aggregating about 11 per cent. Funds are already showing a tendency to flow to reserve centers, and it is quite possible that in this respect, the history of the panic of 1893 will be repeated. In February, 1894, about six months after the panic of the preceding July, the surplus reserves of the New York banks amounted to $111,000,000, the highest they have ever been either before or since. The gross earnings of some railroads have declined 50 per cent, and the average decrease for all the railroads of the country for December was over 10 per cent. The decline in railroad earnings can be attributed only in part to industrial conditions. Unwise and drastic state laws are having a most serious effect on the earning power of railroads. Already two large railroad systems have been obliged to ask for receiverships. It does not seem likely, however, that these decreases in industrial and railroad earnings will reach dangerous proportions and it is altogether probable that a few months of lessened industrial activity will restore the equilibrium between the demand and supply of capital and relieve the strain. Much, however, depends on the good sense with which the people meet the situation, and the extent to which they retain their confidence in the basic stability of the country's industry and finance. The people, so far, have faced the changed conditions wisely and bravely.

Every such crisis brings into prominence some weak spot in industrial or financial arrangements. The incidents of the past few months have clearly demonstrated that our currency system is too rigid to meet the varying demands made upon it. It seems to have been a part of the sequence of every panic that an insistent demand should be made for an increased volume of currency. Mr. Bolles, in his financial history, says of the panic of 1873, "The number of remedies was marvelous, the financier suddenly appeared everywhere, and maturing his plans at a sitting, forthwith sent them to Washington." In 1873 the demand was so urgent that Congress passed a bill increasing legal tender notes by $44,000,000, a project which was wisely vetoed by President Grant. After the panic of 1893, the people persuaded Congress to give its approval to a measure providing for the coinage of $55,000,000 of silver, but President Cleveland followed the excellent precedent of Grant and blocked the bill by his veto. Both of these measures were the result of the clamor of an excited people, made desperate by distress. In the present instance, the demand for a more elastic currency is not the result of the pending disturbance, but the need for some change in our currency system has long been recognized. The currency famine of the past few weeks is only an exaggerated form of a trouble from which we have long suffered at the crop-moving period. What is wanted is not an increased issue of permanent inelastic currency, but authority for the banks to put into circulation, in response to the demands of trade, a bank note that will return to the bank of issue and be canceled as soon as the need is satisfied. A system of bond secured notes fails to adequately satisfy the need for currency for four reasons:

(1) It is inelastic. (2) It lessens the loaning power of banks by the amount invested in bonds. (3) It tends to withdraw funds from the locality where needed to the section where funds are cheap. (4) The volume of bond secured notes is determined by the price of bonds, rather than by the commercial need for currency.

The system of national bank notes in this country, secured by government bonds, is essentially irresponsive to the demands of trade and commerce. The need for additional currency is most urgent in the fall of the year, from August to December, and yet from 1890 to 1906, a period of sixteen years, there was an actual decrease of bank note currency in the fall of three of those years, and in seven of those years the increase was not more than $3,000,000, whereas an expansion of $200,000,000 would not be excessive. In Canada, with a population of less than 6,000,000, there is an expansion and contraction of about $20,000,000 in the fall of each year; and in Germany the amount of currency varies about $120,000,000 every three months. This inelasticity of our currency is, in its final result, a tax on the agricultural interests of the West, for it is there that the demand for currency is most insistent and the inability of the banks to meet this demand is indicated by an increase in the rate of discount at certain periods of the year. Even in the face of great emergencies, bond secured notes have failed to expand in anything like the amount they should, and whatever expansion there has been has usually come after the crisis was past. On June 1, 1893, New York banks held a surplus reserve of $21,000,000, and the volume of outstanding bank notes was about $177,000,000. By the first of August of that year the demand for currency had become so intense that the reserves of the New York banks showed a deficit of $14,000,000, a loss of $35,000,000 in three months, and yet the outstanding bank notes had increased by only $5,000,000. By September 1st, when the urgency was past and currency comparatively plentiful, the volume of bank notes began to expand rapidly, reaching $209,000,000 on November 1st. In October, 1907, when currency was being hoarded and bank reserves were far below the amount required by law, the volume of bank notes increased by less than $6,000,000, but in November, when the situation was improving $50,000,000 of bank notes were issued. Not only do bond secured notes fail to expand in volume when needed, but they fail to contract in proportion to the lessened requirements of trade incident to the depression following a crisis and the result is redundant circulation and exportation of gold at a time when it is particularly needed in the rehabilitation of industry. Of the panic of 1893, Professor Joseph Johnson says, "During 1893, the fours of 1907 sold down to 113, and the banks added to their circulation $37,000,000. During the months of June, July and August of that year, there was a most urgent need for an expansion of the currency, but during these months the new national bank notes did not appear. Not until the panic was over and the money was piling up in all the financial centers, a drug on the market, did the increase in the national bank note circulation take place. As a result of the panic, business being depressed, the interest rate on prime commercial paper during 1894, 1895 and 1896 was between 3 per cent and 4 per cent. The money supply of the country was in excess of its need, and gold was exported in large amounts." By the amount that a bank is required to invest in bonds to secure circulation is its loaning power curtailed. The statement of a bank with a capital of $200,000, deposits of $500,000, and bond-secured circulation of $100,000, would be as follows:

Assets.		*Liabilities.*	
Reserve	$125,000	Capital	$200,000
Bonds	100,000	Deposits	500,000
Loans	575,000	Notes	100,000
Total	$800,000	Total	$800,000

If, however, the same bank was permitted to issue notes based on assets and secured by the same reserves as deposits, its statement would appear as follows:

Assets.		*Liabilities.*	
Reserve	$150,000	Capital	$200,000
Loans	650,000	Deposits	500,000
		Notes	100,000
Total	$800,000	Total	$800,000

From these two statements it is apparent that the loaning ability of the bank is lessened $75,000 by a needless investment in bonds. The need for currency is greatest in rural communities where capital is scarce and rates of interest high and in so far as bonds are purchased to secure circulation, are such communities deprived of capital of which they have need. The amount is loaned elsewhere at a low rate of interest, in the form of investments in bonds. The record of the volume of national bank circulation, since the passage of the National Bank Act in 1865, shows conclusively that the amount of bank note currency outstanding has varied with the price of bonds and not with the needs of trade. This results in redundancy at some periods and insufficiency at others, greatly to the detriment of industry. The use of railroad and municipal bonds to secure circulation would possess no advantage over the use of government bonds. A bond-secured circulation is unscientific and economically extravagant. This country has a great sufficiency of this kind of currency, and it would be a serious mistake to extend the system by permitting the use of other than government bonds. The Aldrich Bill, now before Congress, provides for an emergency circulation secured by municipal and railroad bonds. Such a measure does not reach the seat of trouble, and at best will only provide a partial remedy of questionable expediency.

After years of study and discussion, the American Bankers' Association, through its currency commission, has reached the conclusion that the only kind of currency that will respond easily to the need for such a medium of exchange, is that secured by the assets of a bank in the same manner as deposits are secured. The principles upon which the commission unanimously agreed are, in brief, as follows:

(1) A credit currency should be issued by national banks of the country under proper conditions.

(2) A bank note is essentially the same in principle as a deposit payable on demand.

(3) It is important in any plan seeking to provide a more flexible currency, that no measures should be taken that would impair the market value of United States bonds.

(4) Credit notes should be taxed at a rate that will produce a guarantee fund sufficient to redeem the notes of failed banks.

(5) Banks should keep the same reserve against credit notes outstanding as is now required by law against deposits.

(6) Active daily redemption of credit currency is the proper and only means of making it elastic, preventing redundancy and automatically adjusting its volume to the actual requirements of commerce.

Much of the opposition to the so-called asset currency arises from the failure of people generally to appreciate the essential similarity between a bank-note and a deposit, and also because of the fact that until within a very few years before the passage of the National Bank Act, note issues of banks exceeded deposits, and hence the losses and disturbances occasioned by improper banking were attributed to over-issue of notes. Therefore, the absolute safety of bond-secured notes, as provided for in the National Bank Act, has fostered a prejudice against bank notes otherwise secured. It is probable, however, that had the proportion of bank notes and deposits in the early days been reversed, the losses due to unwise banking would have been equally severe. Frequent bank failures were due, not so much to the form of the demand liabilities of the bank, as to the nature of the loans that the bank made. It is not likely that we shall have a rational reform of our currency system until the similarity between the bank note and the deposit is clearly understood, and the prejudice against any form of security for circulation, other than bonds, is dispelled. That bank deposits constitute a medium of exchange as truly as bank notes, is not a new discovery. The principle was clearly enunciated by Alexander Hamilton in 1790,—"Every loan which a bank makes is, in its first shape, a credit given to the borrower in its books, the amount of which it stands ready to pay, either in its own notes, or in gold or silver, at his option. But in a great number of cases no actual payment is made in either. The borrower, frequently, by use of a check or order, transfers his credit to some other person to whom he has a payment to make. This man, in his turn, is as often content with a similar credit, because he is satisfied that he can whenever he pleases, either convert it into cash or pass it to some other hands as an equivalent for it. And in this manner the credit keeps circulating, performing in every stage the office of money, till it is extinguished by a discount with some person who has a payment to make to the bank to an equal or greater amount."

To illustrate the contention that there is no vital difference between a bank note and a deposit, take a specific instance. A jobber sells a bill of goods on time, sixty or ninety days, and desires to obtain the present use of his funds. He takes the note that he has received, to the bank, and has it discounted. He does not want gold, but what he does want is something that he can use in payment of his obligations and, accordingly, he receives credit on the books of the bank for the face of the note, less the discount. This credit is a demand liability of the bank, and is used by the depositor, by means of checks, as a medium of exchange. It is currency in every true sense, having the same effect on prices as a like amount of bank notes. Suppose, however, that the bank had authority to issue, and the jobber desired and received bank notes in exchange for the notes discounted. The result to the bank and to the volume of currency in circulation is precisely the same. The bank has added precisely the same amount to its demand liabilities, and the volume of currency outstanding is the same, the bank note taking the place of a deposit. By making a loan the resources of the bank are increased in the form of a promissory note and the deposit, or bank note, on the liability side of the account, has the security of the assets behind the loan. For example, take the bank above referred to, with a capital of $200,000 and deposits of $500,000. If this bank issues no notes and holds a 25 per cent reserve against its deposits, its statement would be as follows:

Assets.		*Liabilities.*	
Reserve	$125,000	Capital	$200,000
Loans	575,000	Deposits	500,000
Total	$700,000	Total	$700,000

If, however, the bank has the power to issue notes against which it holds the same reserve as against deposits, the statement would be as follows:

Assets.		*Liabilities.*	
Reserve	$125,000	Capital	$200,000
Loans	575,000	Deposits	400,000
		Notes	100,000
Total	$700,000	Total	$700,000

So far as the bank is concerned, the situation in the first supposition is the same as in the latter, except that $100,000 of its loans had been made in notes instead of deposits. The aggregate of the bank's liabilities is the same as well as its resources. With the community that the bank serves, the situation is very different. By being able to offer to its borrowers the choice of a deposit credit or a note credit, the bank supplies the community with that form of credit instrument which it can use to the best advantage, thus facilitating industrial transactions to a much greater degree than would be the case could the bank only offer the deposit credit.

Mr. Henry Dunning McLeod, in his history of economics, gives a very lucid explanation of the similarity between the deposit and bank note. He says: "And as every advance a banker makes is done by creating and issuing a right of action against himself to his customers, and as a banker has an unlimited right of buying any amount of debts or obligations from his customers, by creating as many of these deposits, rights of action or issues, as he pleases, it follows that every banker has the right of unlimited issue; and a sudden increase of deposits is, therefore, nothing more than an inflation of credit, exactly similar to a sudden increase of bank notes. Deposits are nothing but bank notes in disguise." With the exception of a few savings banks, every bank in the country has the right to issue these credits, which are but bank notes in disguise. This fact should make it very clear that there would be no risk in permitting national banks to issue bank notes, called such, under proper restrictions. It should also emphasize the great need for legislation requiring banks organized under state charters, to carry sufficient reserves. Loans are usually based on mercantile transactions and, therefore, the deposits or bank notes have a security equal to the soundness of business generally, which, as a matter of fact, is all the security that is behind any credit instrument. The objection that asset currency would lead to inflation, is unsound, for the reason that whatever amount of such currency might be issued, would simply displace a like amount of deposit currency, as is shown in the two statements just given. Sound banking depends, not upon the form of demand liability, but on the kind of discounts made. It is on this point that great stress should be placed. As long as a bank's loans represent legitimate, sound business transactions and an adequate reserve is provided, the amount of credits, whether deposit or bank note, is comparatively unimportant. At the present time, the currency of the country can be unduly inflated solely through the medium of deposits, by the making of unwise and unsafe loans. It is proposed to further secure the bank notes by requiring the same reserve of gold, or its equivalent, as for deposits. Theoretically, there is no more reason for taxing a bank note than a deposit, but to absolutely secure the notes of failed banks, it is proposed to levy a tax sufficient to provide for such notes, and inasmuch as an average of about 2 per cent is paid on deposit balances, the tax on notes should undoubtedly be sufficient to off-set this. The notes of a bank differ from its deposits in this respect, that they are intended to circulate over a much greater area than the representatives of deposits, checks and drafts, and it is often impossible, or at least inconvenient, for the holder of a note to obtain reliable information as to the solvency of the bank upon which a note is drawn. It is essential, therefore, that a guarantee fund be provided to absolutely secure every bank note issued, irrespective of the soundness of the particular institution on which it is drawn. Approximately 95 per cent of all the business of this country is transacted by means of bank deposits, and this will continue to be the case, whatever form the currency of the country may take because of the superior convenience of checks as a medium of exchange. When currency is wanted, the need is imperative, as we have all learned to appreciate, and the banks should be in a position to satisfy that need. Deposits, since they originate in industrial transactions, and are permitted to expand and contract practically unhampered by legislative restrictions, constitute the most elastic medium of exchange ever devised, and if the banks of the country are ever to serve the community as they should, like freedom must be given to note issues. Unnecessary restrictions on the power of banks to issue notes are a serious handicap to industry. The desirability of an elastic currency is felt more strongly in the smaller towns of rural communities, where funds are needed to pay for farm labor, etc., particularly during the harvest time. Could the banks serving the agricultural districts offer to their clients bank notes instead of a deposit, the necessity for withdrawing currency from the East would be avoided as would also the return movement which creates a plethora of loanable funds in New York, unduly stimulating speculation and giving a wrong impression as to the plentifulness of capital and credit. An asset currency is not a new kind of medium of exchange. Practically every civilized nation of importance permits note issues secured in part, at least, by the general assets of banks. Canada, Scotland, France and Germany, all make provision for bank notes of this nature. The Reichsbank, of Germany, is permitted to expand its circulation without limit, but if the amount of note issues uncovered by cash in bank, exceeds 450,000,000 marks, the bank must either increase its coin reserve to cover the excess or pay a tax of 5 per cent on the amount over the limit of 450,000,000 marks. Of this bank, Dunbar says: "The effectiveness of the elastic limit, in time of crisis, has never been severely tested, but it has been found to meet with much success, exceptional temporary demands for currency, which, under a rigid system of issue, like that of the Bank of England, could only have been satisfied by the withdrawal of specie or notes from the reserve. It is noteworthy that with one exception the limit has been only exceeded at the end of September and at the beginning of October, or at the end of December and the beginning of January, at the opening of the autumn or winter quarters of the year, when, for various reasons, there is regularly an increased demand for currency. In England, similar demands can be met only by withdrawal from the reserve of the Bank of England and through the temporary nature of such demands is well understood and in itself causes no alarm, the difficulties of the situation are thereby enhanced when the bank is trying to strengthen its reserve against more serious drain in other directions. Such demands the Reichsbank is enabled to meet, without difficulty, through the device of the elastic limit." Representative Fowler has prepared a bill for introduction into the House, which revolutionizes the entire currency system of the country, and its enactment would, without doubt, unnecessarily disarrange existing financial methods to the detriment of industrial conditions generally.

The laws of finance are as well known and as sure in their operation as the laws of physics and the problem before us is simply to apply these laws wisely. For many years, because of the conditions peculiar to this country, we were obliged to conduct our financial affairs along unknown and untried paths, the experience of the older countries did not afford suitable precedent for our guidance, but to-day we have reached a stage of development wherein we can learn much from the older countries, and it certainly is the part of wisdom to profit by their experience.

Should the present financial disturbance be the means of inducing Congress to pass a bill providing for an asset currency as outlined by the currency commission of the American Bankers' Association that would respond as easily and as readily to the needs of trade and industry as does the deposit currency, we might feel almost repaid for the discomfort and distress of the period. On the other hand, unless the present system of bank note currency is modified in a rational and scientific manner, we must expect the periodical repetition of the disturbance through which we have just passed, for of all the factors that tend to develop unsound industrial conditions, a system of bank note currency that fails to expand or contract when it should, is the most potent. The plan proposed by the currency commission of the American Bankers' Association is the result of years of experience and study on the part of the leading bankers of the country, and for this reason, if for no other, it merits most careful consideration. It is undoubtedly the best plan now before the American people.

AN ELASTIC CREDIT CURRENCY AS A PREVENTIVE OF PANICS

By Wm. Barret Ridgely,
Comptroller of the Currency.

The commercial and financial conditions existing not only in the United States, but throughout the world, in the early part of October, 1907, which made a panic or crisis possible, were the accumulated and composite results of the business transactions of many years. A reaction in business was due and inevitable, in fact, it had for some time been in progress. The exact incident which precipitated the crisis and produced a panic, is not very material. If it had not been the collapse of the corner in United Copper stock, it might have come from the Westinghouse receivership a few days later, or from almost any one of a number of similar developments which were not only possible, but probable.

The expansion of business and inflation of credits, whether based on transactions which would be classed as perfectly sound and legitimate, or on semi-speculative ventures, or on speculation pure and simple, had reached the point where there had to be some settlement and liquidation. While it might not be difficult to assign any single transaction to one of the before-mentioned classes, it is impossible to separate the results on the general business situation and say just which added to and produced the catastrophe and which did not, how much was due to legitimate enterprise and how much to speculation. The time had arrived when some one had to pay the penalty for the indulgences of the past. The reaction and liquidation were not only absolutely inevitable, but necessary and desirable, in order to bring business of all kinds back to its normal condition. This should have been accomplished, however, in a much more orderly, quiet way, as it had been taking place for months, without the resulting excitement and foolish sacrifices incident to any condition of panic.

There never is any necessity for a panic and this, of all others, should never have taken place because the conditions did not justify it in any way. Least of all, should we have had a panic among the banks, and this particular panic might easily have been avoided. In its place we might have had a more reasonable and orderly readjustment of credits and values if we had had a better system of currency and a better system of banking, both national and state. A better system, I say; not better banks.

We would also have been in a very much better position if the relations between the business world and the Treasury Department had been on a different basis: if the Treasury Department had been either entirely out of business and free from responsibility as to business conditions, as it ought to be, or if, being in business, it had had the proper facilities to deal with the situation as it arose.

I have no criticism to make of the operations of the Treasury Department, but on the contrary, from my experience during the three administrations of Secretaries Gage, Shaw and Cortelyou, I believe they are all entitled to the highest praise and commendation for what they have done to make the best of bad situations, with antiquated, complicated and cumbersome facilities, often little better than mere make-shifts.

Mr. Cortelyou, for instance, has done splendid work in the relief he has rendered in the last few trying weeks, by distributing government deposits and stimulating bank circulation, when it was so desperately needed. He has shown himself to be a strong, courageous, resourceful man, in a great crisis, and is entitled to all credit for it. The deposits of the government with the banks, have been very potent in checking the panic and restoring confidence, and on this account we find many men commending such a system of government finance. It is true the most has been made of it, and it has been done with not only fine ability, but with absolute fairness, with no end in view but the public welfare. But look at the situation. The United States Government has collected from its people $245,000,000 surplus, above its necessary expenditures, and in order to restore this money to circulation and repair the damage done to business by its withdrawal, has had to deposit $222,000,000 with the national banks; and when the supply of government bonds gave out, has had to accept various other bonds as security.

This is all that could be done under the circumstances, but the surplus should never have been collected to such a vast sum. The government should not take money from you and me when we need it, just to keep it on hand as a panic fund. It is no proper governmental function to tax people for such a purpose. If it is conceded that the government should take a hand in such business, what an awkward, complicated method it has of doing the business. What a wasteful use of the money available.

The government should collect its revenues and make its payments as every one else does, through regular banking channels. The money should stay in the banks and the smallest possible amount should be withdrawn from circulation. If the national banks are not satisfactory for such use, we should have a central governmental bank to do the government business. The funds left in its hands would be available for use by the other banks for business of all kinds, either as reserves against circulating notes issued, or as loans and rediscounts to the banks. With such facilities as this at its command, the Treasury Department could prevent panics and keep business steady, instead of only being called in like a doctor to see a patient after he has become desperately ill. What we need is better hygienic and sanitary conditions and less medicine. The whole system is wrong, and requires change and readjustment.

While we are yet probably too close to the incidents of this panic to be able to properly judge of the causes and effects, we may now, while these matters are fresh in our minds, and their results have been brought home to us with such force, take account of those things which have made the trouble, and at once begin to devise means not only to repair the damages done but, much more important, to foresee the future, and make provision on proper principles for such changes as will avoid such troubles, or mitigate the effects of the disturbances which cannot be prevented.

It is needless to go into details as to the events which produced the business conditions existing in the United States for the last six months or a year. Everyone is familiar with the great expansion in business of every kind which has taken place all over the world. Probably the most potent factor in all of this, if it is not the sole cause of it, has been the enormous increase in the production of gold, which has more than quadrupled in the last few years, and is now at the rate of about $430,000,000 per year. It is this, more than anything else, that has more than doubled selling prices of wheat, corn, cotton, pig-iron, steel, copper and all the great staple articles of wealth which are the basis of all modern commerce. While this was going on, it was absolutely inevitable that there should be a great increase in the volume of credits not only in all the banks, but between merchants and manufacturers, between wholesale merchants and retail merchants and so on, through all the lines of business transactions. There is no country in the world, and no line of business, which has been free from it. It has led to an increase of what may properly be called legitimate investment values not only in mines, manufactures, and mercantile concerns, but in real estate of all kinds; city and suburban lots, farms, and tracts of timber. It has increased the prices of not only sales and transfers of the actual properties themselves, but of mortgages, stocks and securities based on them.

It is not only natural, but probably inevitable, that all this expansion should be overdone, for side by side with the transactions of men who are making such investments carefully and conservatively, based on real values, were those of men who, some through lack of judgment and over confidence, and others through dishonesty, were promoting schemes and issuing securities based on far higher values than were justified. This universal process of expansion and increase of values has been, on the whole based on sound conditions and justified by the facts, but it has been evident for several years that we were approaching the crest of the wave, and there must be some slackening of pace and almost inevitably some reaction or decline in prices.

It must be remembered that this expansion started from the abnormally low values and basis which had followed the crisis and depression of the year 1893, and the few years following. Wealth at that time was measured on an abnormally low plane of values. It was not only perfectly proper, but highly desirable, that they should be increased. This has gone on, however, as events have shown, until the limit has been reached. The natural limit of all such movements is the amount of reserve money which can be held by the banks as the basis of their credits. The proportion of this has been growing less and less for several years, and for at least two or three years there has been a condition of scarcity of reserve money not only in the United States, but in all other countries.

Another important factor, and in some respects the most important, is that such an enormous proportion of the existing credits has been transformed from liquid capital into fixed capital and investments, leaving a scarcity of liquid capital for the enterprises which were in operation. It has been this, more than anything else, probably, which has led to the necessity for a contraction of credits and more or less liquidation.

During this whole period of active business, there have been many times when conditions have brought about violent reactions in the stock market. There have been several stock market panics, notably such as the one which occurred March 9, 1901, any one of which might have produced a far more serious bank panic than that which occurred in October, 1907, if business conditions had not been found so entirely sound that the disturbance was practically confined to the stock market alone.

During the past few years there have been several periods of marked depression although they have not been of long duration, nor accompanied by any considerable number of failures. Why, then, should we have had a banking panic of great severity in October and November, 1907? It cannot be that it was entirely due to speculation, for this existed in much less volume when the panic occurred than it has in several other periods when it produced stock-market panics. The more speculative loans were far less in volume in October, 1907, than they were a year ago. The main difference in the situation must have been that we were one year farther along in the period; that the whole world had come to realize that there had to be a readjustment; that many of the largest and strongest concerns, as is well-known, found difficulty in renewing their old loans, and foresaw that they were soon to be compelled to reduce the volume of their operations.

Conditions during the summer of 1907 were becoming more and more acute, and were greatly strained when the demand came for the crop-moving funds. The total volume of credits was up to the maximum that could be carried on the reserve money available. When the withdrawal of deposits in the demand for crop-moving money came, it was necessary for the banks to supply this with reserve money. As far as this money had to go into circulation outside the banks, it made a reduction in loans to that extent inevitable.

If our system had been such that the country bank first, then the reserve city bank, and finally the central reserve city bank, could have supplied some form of credit notes in payment of their deposits, the situation would have been entirely different. If we had had such a system of notes as they have in Canada, for instance, which expands quickly and automatically in the fall of every year, when this demand comes, and contracts just as surely by February of each year, there need have been no apprehension in regard to the crop-moving period. There would have been no variation in the volume of credits at all. Reserve money in the banks, which was ample for the deposits, would have been ample for the credit notes, if they had been available.

It need have made no difference at all in the total volume of credits. The total of note credits and deposits would have remained the same with the same reserve against them. No one need have cared how much the people changed their credits from one form to another, and there would have been no panic among the bankers as to the effect of a demand for current cash. There need have been no disturbance of payments, collections, or remittances. People who were insolvent or too badly extended might have suspended or failed, but the man who was in good solvent condition need not have been fearful, least of all panic-stricken.

Instead of this every banker was at once compelled, in self-defense, to increase the amount of cash on hand. That is, instead of maintaining his reserve at practically the same point and changing his deposit credits into note credits, he had to meet his deposit credits in reserve money, and to call upon his reserve and central reserve agents for it. When a demand of this kind came suddenly upon the country it was not surprising to find that deposits which had been counted on as reserves were not reserves at all because they were not available. This developed at once the two inherent weaknesses and defects in our banking system; the lack of any elasticity or expansibility of the currency, and the uncertainty of the system which piles reserve on reserve, first in the reserve cities and then in the central reserve cities.

The way to cure this trouble and prevent recurrences of events of this kind, is to give the banks and the people who are their depositors some proper system of elastic credit notes and to compel banks to carry against these notes and their deposits, larger reserves in cash on hand, and keep their reserves in other banks where they will surely be available.

The experience of all the rest of the world, in every important country, has shown that the best way to accomplish this result is by means of a strong central government bank which will handle the finances of the general government, act as reserve agents for other banks and have the sole right to issue credit bank notes. This bank should be under government control, and subject to severe government supervision and inspection.

Among students of these problems the opinion is steadily growing that until something of this kind is done in the United States, we shall never have such a financial system as we should. With such an institution as this in operation, there could have been no excuse at all for such a panic as occurred this fall. Months ago, a central bank could have brought about such a gradual contraction of loans, and such reduction in the volume of business, as would have enabled us to meet this situation quietly and calmly without anything approaching a panic. Speculative corners might have collapsed, trust companies with large lines of commercial deposits unprotected by reserves, and invested largely in speculative ventures might have failed or have been liquidated, manufacturing concerns with inadequate capital attempting to do too large a volume of business with borrowed money might have been forced to suspend or submit to receiverships, mercantile concerns which had been able, through note-brokers, to dispose of such a volume of notes that their failure to renew brought on embarrassment might have been tided over and given extensions;—all without any bank panic if we had only had the advantage of a great public bank. The people who are engaged in smaller lines of business would thus have been spared the losses and embarrassments due to such conditions as have existed within the last few weeks.

As long as modern business is conducted on credit, as it must be, there will inevitably be periods of expansion and inflation which are inevitably followed by periods of liquidation. No one has ever suggested any means by which this can be avoided. With the knowledge that such conditions must exist, it is the highest duty of the government to provide proper means for dealing with them. Until this is done, we have only ourselves to blame for such a panic as has occurred within the last few weeks. It is useless to blame it to speculation. It will not cure the evil to prohibit speculation in grain futures, or trading in stocks on margins. These are all only incidental to the great movements which we have been tracing. They do not cause the expansion of business, and do not bring about its collapse. It is still more unjust to blame such a condition upon the national administration, the acts of the legislative authority, or of the administrative officers.

Nothing can be more unfair and unwarranted by the facts than the efforts of his enemies and critics to put the blame of this panic on President Roosevelt. He is in no way to blame for the general conditions which were world-wide and far beyond the power of any man to prevent. He is not in the least responsible for the special incidents which started the feeling of panic among the banks, and led them to go to clearing-house certificates and a partial suspension of payments. There is far more blame due to those critics of the President who, for months before there was any condition approaching a panic, seized upon every remark made or action taken by him, and predicted its disastrous effect on business.

If this panic is in any way due to talk and prediction, the President's critics have done their utmost to produce it by their doleful lamentations and pessimistic predictions of what would happen if the President did not change his policies in regard to the enforcement of the laws. It is significant that the trouble started, and has been worst, in New York, where there has been the most criticism and abuse of the President and where he is supposed to have the most opposition. There has been less panic and trouble in the country, in the West, and among the smaller business men and the working people where the President has always been the strongest, and where anything he has said or done would surely have the greatest effect.

This whole episode has been more a panic among banks and bankers than among the people. Except in the City of New York, there has been surprisingly little excitement among the people, and very little distrust of the banks. That there have been so few failures and that the panic has been no worse, has been due to the intrinsically sound condition of the banks and the business of the country, to the wonderful courage, patience and forbearance of the business men and people. They have quickly adapted themselves to the necessities of the situation,, and availed themselves of every possible temporary expedient to get along until the excitement was past. This has been especially true of the working people and the smaller depositors, who in many notable instances, have acted in concert with great coolness and deliberation, to support their local banks and to share their portion of the burden.

The critical period has passed with surprisingly few failures. Conditions are improving daily; banks are resuming payments and remittances, and the panic is a matter of history. We have yet to face some depression in business, and have to undergo the somewhat painful, but very necessary process of reducing expenses, practicing economy, and paying our debts. But there is nothing that pays an individual or people better, and when matters are readjusted, and prices are on a better and more stable foundation, no one who knows our country and people, our resources and powers of recuperation, can doubt that in a short time our business will again proceed on a sounder and more durable basis. Our prosperity, while less spectacular and sudden, perhaps, will be greater than ever before.

THE READJUSTMENT OF OUR BANKING SYSTEM AND THE UNIFICATION OF THE CURRENCY

By Hon. Charles H. Treat,
Treasurer of the United States.

The importance of remedying the confused condition of our many issues of paper currency and relieving the stigma of discredit that has attached thereto for a great nation like ours has been a favorite topic of discussion for several years among students of finance. It would seem desirable that such modifications should be made as would bring about a more harmonious unification of currency issues.

It is not to be denied that formidable obstacles to securing such a result exist, more especially in overcoming the prejudices in the public mind and the views of legislators, who hold with great tenacity long-cherished ideas on the efficacy and wisdom of a retention of the "greenback," and the opinions of the silver doctrinaires who believe in basic money as the safest and most desirable form of circulating medium. Our conglomerate currency issues have been largely the growth of a necessitous condition that has been met by temporizing legislation; therefore this must be the excuse for the weakness and helplessness that has produced such an unsatisfactory currency system.

As we come out into the light of national strength and independence, we look back with a more critical eye upon present financial aspects and their origin. It is, however, encouraging that we as a people are restive over the disclosures thus made. There is an undoubted sentiment that something should be done that shall place our monetary system upon such a broad and comprehensive basis as will be lasting in its beneficent workings and stand the test of time, not only for half a century, but for an entire century.

In view of these facts, I offer a plan that is more in the nature of a suggestion, but which I hope may incite intelligent examination and discussion that shall evoke something of value in response to the yearnings of those who would like to see a remodelled currency system, a plan for national finance that should not be discreditable to our intelligence and our experience of to-day.

Retirement of United States Notes

(1) I advise legislation by Congress, authorizing the Secretary of the Treasury to retire United States notes in sums not less than 50 millions nor exceeding 100 millions per annum. The payment of the United States notes and the releasing of the reserve fund for their redemption would give a legal reserve of about 350 millions in gold for banking purposes.

Public sentiment is once again agitating the desirability of utilizing the advantage of an overflowing national treasury for the gradual retirement of United States notes or what are known as "greenbacks." The minimum sum, $346,000,000, has not been changed since Secretary McCulloch was instructed by Congress not to retire any more of these notes and when Congress declared that that amount should remain in circulation. Since that time there has been periodical agitation by bankers and financial students to secure a revival of the practice of Secretary McCulloch of retiring "greenbacks" when the surplus of the treasury allowed such a step, under the enactment of February 25, 1862. Various objections have been raised to this among others, that it would cause a contraction of the currency on the part of others, that it would destroy in a measure the amount of reserve money which was not at all excessive for banking use; and by others, that there would be a saving of interest.

The increased supply of gold would seem to be an assurance that there need be no apprehension of a lack of a sufficient legal reserve, in case 20 or 50 millions per annum of "greenbacks" were replaced by gold coin. It has perhaps escaped popular attention that we have over 150 millions of coin and bullion held in reserve against the issue of 346 millions of greenbacks, which leaves an approximate currency supply of $170,000,000 available for circulation.

The permissive circulation of United States notes is 346 millions. Of this, there is an average of 26 millions held in the vaults of the treasury, which, taken from this sum leaves 320 millions in actual circulation. There is now a reserve fund of 150 millions in gold for redemption of United States notes. Taking this from the 320 millions leaves only a practical gain to circulation of United States notes of 170 millions, provided that the reserve fund of 150 millions were not released.

The saving of interest can, therefore, only be reckoned on 170 millions, which, at 2 per cent, would amount to about $3,700,000 annually. The saving of interest to the government is but a small item for a circulation of $170,000,000.

If the gradual retirement of greenbacks were known to be the settled policy of the government, this would give rise to an enhancement of the credit of the country, and the financial repute therefrom would far outweigh any paltry saving of the interest account. Such a step would convince the international investor that gold was the legal and established standard of the country, and that he might confidently feel that his investment would be returned to him in gold, on demand. It would promote a larger growth of the national banking system, which is doing so much to uphold the credit of our securities. It follows, therefore, that no apprehension need be felt of calamitous results from a gradual retirement of the greenbacks.

Retirement of Silver Certificates

2. I advise the retirement of all outstanding silver certificates—about 475 millions—and the issuance therefor of 2 per cent United States fifty-year bonds for an amount not exceeding 50 to 100 millions per annum. The silver dollars so released from pledge in paying off silver certificates could be utilized for the government's need of subsidiary coin. This would do away with the purchase annually of a large amount of bullion, which in the past year amounted to nearly nine million dollars.

3. The retiring of these two kinds of money—United States notes and silver certificates—would do much to complete the unification of the currency, as national bank notes and gold certificates would be the only currency used.

4. I would advise that the present issue of national bank notes be retired, and that the government bonds so pledged for circulation and payment be redeemed by a special bond known as a "banking bond," bearing interest at 2 per cent for a term of not less than fifty years; and that such bonds as are now held for circulation should be redeemed and paid for at a premium of 5 per cent to reimburse the average cost to the investor, as the government should not require the banks to pay more money than they actually receive therefor.

I advise that the sale and purchase of these banking bonds should be under the absolute control of the government, and that when a bank desires to retire its circulation, the government shall buy the bonds at not less than par and without premium. This will do much to prevent the daily speculation in government bonds which not only causes fluctuations in price, but affects the volume of circulation without regard to business conditions. The bonds so purchased should be destroyed. The denominations of these bonds should not be less than $10,000 nor more than $100,000. The bonds to be issued for the retirement of silver certificates should also be banking bonds as before described. This would furnish the basis of additional circulation without contracting the volume of currency and the total amount of 500 millions, which is the measure of the volume of silver certificates, would then be reissued during the term of ten years in the form of national currency.

Some one might make objection to the retirement of silver certificates, in that there may be no legal reserve money to take its place, but in the gradual retirement of silver certificates to the amount of 50 to 100 millions per annum we could fairly look for an adequate supply of gold. The volume of gold production is now over 400 millions annually, and our country is *increasing* its gold output in comparison with other nations.

United States National Bank Currency

5. The new issue of bank notes should be known as "United States National Bank Currency." This designation would give it an *international* recognition, and the sentimental effect of such a designation would inspire world-wide confidence in its genuineness and its financial responsibility.

I would advise that simplicity of design of all notes be carried out in the different denominations, and that the distinction should mainly be upon two points: first, the denomination itself, and second, a vignette differing for each denomination issued. This would give such uniformity in size and appearance, that the note would easily be recognized and would be more difficult to counterfeit. The denomination numbers should be *large*, so that the counter could not fail to see the same clearly at a glance. A vignette is said to be the most difficult thing to counterfeit, and experience has proved that the least embellishment on a note affords the greatest protection against counterfeiting. The different banks using this new circulation would be known only by the numbers printed on each note.

A sentimental objection might be made to the elimination of the individuality of the bank note, but when the facts are taken into consideration, it is well known that it is very seldom that the holder of a bill looks at the signature, his only concern being that it bears the impress of guarantee by the United States government.

This uniformity of size and design would be less expensive to prepare, and a large quantity of currency could be kept on hand which would be applicable to the needs of any banker. The only names of officials attached to said notes would be those of the Comptroller of the Currency and the Treasurer of the United States.

These notes should be issued in such a percentage of denominations as would meet the existing and growing demands of business conditions. All banks should be required to take out such percentage of ones, twos, fives and tens as would meet the requirements of business. The same form of note would provide for a permanent, as well as an emergency or "supplemental" currency.

The guaranty of the government on said notes would simply be expressed thus: "*This note is secured by bonds deposited with and guaranteed by the United States.*" Three hundred millions of these notes should be held in reserve for additional circulation, and as they would be used in common by every national bank, there would be no risk in so doing. There would also be a lessened expense in repairing and issuing the same.

This re-adjustment would not only unify the currency, but in its simplified design, would avoid the well-deserved criticism of confusion in our monetary forms of currency, and make it more acceptable in all the money markets of the world. This unification of the currency has long been desired by large numbers of the American people, but no feasible plan has been put forth. These notes would be acceptable for taxes and other purposes in the same way as the present national bank notes, which would be in supply until all the silver certificates had been called in and canceled.

There might be objections on the part of some devoted advocates of silver, that it is the money of the people, and that they would oppose its withdrawal. The records of the Treasury show that the demand for silver dollars over that for currency, arises mainly from the fact that the transportation of the silver dollar is made *free by appropriation from Congress,* whereas there is a charge for the transportation of currency. This was abundantly demonstrated last year when the appropriation for free transportation of silver dollars was exhausted and the demand therefor was reduced nearly *seventy-five per cent!* When a new appropriation was granted silver dollars were given in demand because transportation was made free.

It might be further objected that the retirement of silver certificates would make an additional interest charge of some ten million dollars to the American people, but it must be considered that there would be a great saving to the government in the profit of utilizing the silver dollars for subsidiary coin, and also in the lessened expense of furnishing currency of one simple uniform design, and in the saving of loss to the government by the abrasion of silver dollars. This is a large item in the Treasury to-day, as not less than a million dollars are short-weight, and probably on a closer investigation, this amount might be largely increased.

The paramount question, however, is not simply one of saving a small amount of interest, but it is, what would be to the greater advantage, convenience and profit to the American people? It would seem to me that now is the time, when far-reaching amendments are needed to the laws of our banking system, to so construct a system of finance which, while it shall be absolutely safe and desirable in its appearance, shall also have the elements that are needed not only for a permanent but for an emergency or supplemental circulation.

I append hereto my well-known views on the supply of a supplemental currency, which needs no further elucidation. This whole plan, as I have outlined it, would not only accomplish a fundamental re-adjustment of our banking system, but would, I believe, meet the demands of the American people to-day, and likewise the needs of fifty years hence, when the population of the country shall have largely increased and the business needs be correspondingly enhanced.

It would seem that our requirements are peculiar to ourselves and cannot be likened to those of any other nation. We grow crops to the value of over seven billion dollars and manufacture to the amount of fifteen billions. Legislation should therefore be so comprehensive that an adequate amount of currency could be issued, under proper legal forms, that would always provide sufficient funds to move the crops without an exorbitant tax such as is advocated by the friends of asset currency, which would seem to penalize the grower for producing excessive crops or the manufacturer for making an enlarged output.

There should be a broad distinction between the use of a supplemental currency for recurring autumnal needs, and an emergency currency in time of panic. What this country needs is not only an enlargement of banking credit at crop-moving seasons, but also the establishment of a system whereby the panicky conditions that recur every seven or ten years may be met.

The present National Banking Act should be so amended as to permit any national bank with not less than 50 per cent of its capital invested in United States bonds, to issue national emergency or supplemental currency not exceeding the remaining 50 per cent nor more than its capital stock. Such emergency notes I would have similar in form and design to our present national bank notes, but the guaranty thereon should be modified to read: "This note is secured by bonds deposited with and guaranteed by the United States." The issue of these notes might be made in four, six or eight months, dating from August 1st or September 1st, as may be needed at crop-moving periods.

I would accept collateral for this supplemental currency issue in the form of state and municipal bonds that meet the requirements of savings banks investments in the States of New York, Connecticut, Massachusetts and New Jersey, such securities to be accepted at 70 per cent of their market value. I would have the bank make a collateral note to the order of the Treasurer of the United States on four, five or six months, and should it fail to meet the notes at maturity, it should be penalized in the sum of 2 per cent per month, until paid; the United States Government to guarantee the redemption and payment of all notes so issued, at a charge of about 3 per cent. I would not extend the selection of bonds to other than those of states and municipalities which have the government power of taxation behind them, as it would be well, in my judgment, to limit this class of bonds and not open the door to the acceptance of railroad, industrial and real estate bonds.

How Inflation Would be Avoided

This plan requires a margin of 30 per cent on the amount of notes issued, which, it would seem, would be ample in every contingency to safeguard the government. These notes would have a definite time for maturing and when they were paid for, so much currency would be retired which, practically in a compulsory way, would prevent any permanent or undue inflation of the currency. As to the amount of issue, Congress could determine it, based upon the outstanding issue of national bank notes, permitting an increase of $33^1/_3$ or 50 per cent, in addition to the regular circulation.

This plan would give practically all the advantages of a great central bank, as far as the issue of currency is concerned, without the drawbacks of mixed responsibility or adding to the confusion of another form of currency, which there would be if a great central bank were permitted the right to issue its notes. It would seem that making the interest rate about 2 per cent is already too low. It might be increased to 3 per cent per annum—1 per cent more than interest on United States bonds—what the national banks now pay in semi-annual duty and taxation on circulation. If good collateral be furnished, why should the people be compelled to pay any higher rate?

Some criticism has been made that a larger percentage of loans than 70 per cent could be made on good state and municipal securities, but it is of importance that the price of United States 2 per cent bonds should be safeguarded, and that their supremacy as a security should be upheld, whereas if too large an advance was made on other bonds, the credit of the 2 per cent would be impaired.

Interest should Not be Excessive

It has long been the practice in finance that the borrower who gives the best collateral secures the loan at the lowest rate of interest. If the currency was issued on the general assets of the bank, without compulsory retirement, the risk would be greater and the rate of interest increased. An excessive rate of tax is not to be considered in this case, because the issue of supplemental currency is applied to a normal condition of business that recurs every autumn.

Adequate monetary facilities should be provided to move the crops without disturbing the normal conditions of banking business that prevail throughout the country. The crops cannot, under present conditions, be moved without a great disturbance, by the calling of loans amounting to $250,000,000 or $300,000,000.

To meet this exigency it is important that a supplemental currency should annually be issued at a low rate, at moderate cost and with specific security, as is now required for the issue of all bank notes. This supplemental currency should be so liberal and attainable in its terms that the burden of the accommodation would scarcely be felt.

The advocates of asset currency propose that an issue of bank notes be made, based upon the general assets of a bank and taxed at a high rate of interest. To this conservative men demur, because the security behind the notes would not be sufficient to guarantee them, the assets of a bank not being proper security for the issuance of notes, even with the addition of a reserve redemption fund.

What the farmer, the manufacturer and business man generally need is to have banking accommodations at a moderate cost. It would seem that those whose productions are so large, whether from the field, the factory or the mine, should not be penalized by a high rate of interest for the use of money at every recurring crop-moving season. If safe collateral be furnished the charge should be at the lowest rate of cost of issuing and redeeming the supplemental notes.

Repeal Tax on National Bank Circulation

The national government now has a monopoly of our currency. Therefore it should not withhold from the people this inestimable service, when good collateral approved by bankers can be given for the currency furnished. It might be well to repeal the tax of one-half of one per cent on bank circulation and also permit banks to take out additional supplemental circulation to the extent of the premium on bonds now pledged for redemption of the bank notes.

I feel justified in making this suggestion that the charge against issuing the supplemental currency be no more than 3 per cent per annum, for as the government charges no interest on its public deposits, why should it do so for loaning its credit? It is only as rational an expansion of the privilege to loan the credit of the government in the form of national bank notes as it is to loan the government's money under the name of deposits.

It does not seem to me that any valid objection could be made to the issue of such supplemental currency under government control. This plan would seem to me a natural evolution of the custom of national banking. It does not commit the government to any untried or hazardous experiment or confuse the public mind with the idea that there is to be any radical departure from the present system of banking.

No danger lurks in the plan. Seeing as I do every day the importance of affording additional relief to the business interests of the country, I offer a plan that does not pretend to be a panacea, but is, I believe, not the dream of a financial visionary. I am no "faddist" on currency reform, and am looking only for the attainable, and for a plan that shall commend itself to the common sense of the American people as safe and practicable.

THE NEED OF A CENTRAL BANK

By George E. Roberts,
President Commercial National Bank, Chicago, Ill.

The financial panic and general suspension of cash payments by the banks of the United States, with the sudden paralysis of business resulting therefrom, did more to convince the people of the country that there were still serious defects in our currency system than all the arguments to that effect that had ever been made. Wall Street had been suffering from hard times since early in the year, quotations for securities had been going down but the prosperity of the country's industries seemed to be untouched. No doubt it was inevitable that such conditions in the security markets would eventually affect the industries, for when stocks and bonds are unmarketable the supply of capital for new enterprises is cut off. But a partial explanation for conditions in Wall Street was to be found in the glut of securities which had been poured out to support undertakings which are even yet uncompleted. The fact is that no recession in business was observable up to the date of the panic. The suspension of cash payments, the consequent inability of employers to obtain money for pay-rolls, the fright, and cancellation of orders, came on the general business community like a stroke of lightning from a clear sky. Since then few have disputed that currency reform is needed.

But there remains the difficult task of uniting public opinion upon some plan. Broadly speaking, three policies are proposed. First, a modification of our present system of bond-secured currency, by allowing, under a high tax, temporary, or emergency issues upon miscellaneous bonds. Second, the plan adopted by the American Bankers' Association, or something similar, allowing all national banks to issue credit notes against their general assets, secured only by a common guaranty fund. Third, the establishment of a central bank of large capital, which should exclusively perform the function of issuing credit notes to meet the varying needs of trade.

The first of these plans is confessedly a make-shift. Its advocates do not claim that it should be accepted as a finality, but only that it is the best measure that can be enacted in the present unsettled state of public opinion. It would be inoperative in an emergency unless the banks set aside permanently a part of their resources for that class of investments, as a measure of insurance. They might do this, but it would be at a sacrifice of earning power, and effect a corresponding curtailment of the banking capital available for current use. Furthermore, the plan contemplates emergency issues solely, and there is no claim that they would be responsive to the ordinary fluctuations of trade.

The second plan, offered by the American Bankers' Association, is more comprehensive, and contemplates a genuine credit currency. It is, however, something of a compromise, the issues being limited to forty per cent of a bank's capital, and dependence against over-issue is placed in part upon this restriction, in part upon facilities for redemption and in part upon a graduated tax. Without going into an extended discussion of this plan, it may be said that it has never been tried under the conditions which exist in the United States, and the very restrictions imposed add something to the uncertainties. The success of the plan would depend upon the regularity and rapidity with which the notes were redeemed. The scheme itself contemplates that the self-interest of the individual banks will prompt them to return the notes of all other banks for redemption; but that is a practical working detail, the success of which, in view of the great number of banks outside the system, cannot be positively foretold. The state banking institutions would have no interest in promoting redemptions, as they are allowed to use the notes of national banks for reserves.

The first argument for a central bank is that such an institution, organized into, and made a part of, our national banking system, is needed to complete the latter, and all the more needed if important new powers as to currency issues are to be conferred upon the individual banks. The defects and weakness of the national system to-day are due to the isolation of, and lack of cohesion among, the great number of scattered units. The recent crisis has furnished ample demonstration of this. As a rule throughout the interior the banks had their usual supply of currency, but they restricted payments of cash, to the serious injury of business, not so much from fear that money would be hoarded by the public, as from fear that it would not find its way back to the identical banks that paid it freely. For example, a bank which had the account of a railroad company might decline to supply money for its pay-rolls, because the large sum thus taken from it would be scattered along a thousand miles of line, and although it might replenish the reserves of other banks, there was no probability that any would come back to the original source. In like manner the absence of leadership and of common policy in the granting of credits resulted in a more precipitous contraction of these than was necessary. If contraction and liquidation are to be the order of things, everybody understands that there are certain advantages in being among the first to act, and so a crisis is accentuated by a disorganized scramble to force collections just when the interests of the country require judicious liberality in the matter of credits. If our banking system had at its head a strong institution, conservatively managed, and able to support any critical situation, it would practically make the policy of the whole system at such a time, for the individual banks would not feel that they stood isolated and alone and compelled to think only of self-preservation.

One result of the great number of small banks is that banking is not a trained profession, although it deserves to be. The bankers of the United States are a capable body of business men, but they have generally drifted into banking from some other occupation, without education in what is entitled to be regarded as a science—the science of the exchanges. No better proof of this is needed than the fact that so many of them see no reason why the notes of one bank should not be good in the reserves of another. This fact, that so large a proportion of the bankers of the country, although good judges of credits in their localities, and practically successful in the ordinary routine of their business, are not familiar with some of the fundamental principles of finance to which the country as a whole must conform, is a substantial reason why the national banking system should be surmounted by a supervisory institution. It is true that we already have a system of supervision through a public official, the Comptroller of the Currency, and there is no intention here of criticizing the administration of that office, which has usually been very good and is ably conducted at the present time. The Comptroller's supervision is largely exercised through his force of examiners, and the personnel of this force and the character of its work have been constantly improving as political considerations have lost influence in the making of appointments. Nevertheless, there is inevitably a degree of formality and rigidity about such official supervision. The clearing-house associations of the larger cities have found it advantageous to establish their own system of examinations, and it is apparent that a central bank, which was a part of the system, and to which the individual banks were in the habit of applying for accommodations, would be able, through its examiners and by the information constantly coming to it through many channels, in the practical touch of business relations, to exercise a most efficacious and wholesome influence. This supervision would be particularly desirable if the note-issuing powers of the individual banks were to be enlarged. The central bank with its branches would then serve as the redemption agency through which the notes of the individual banks would be cleared or redeemed and through which the most active, effective and practical supervision of the note circulation would be maintained.

One of the features in which our banking system compares unfavorably with those of foreign countries is in the control of the interest rate. The natural and proper corrective of a tendency to over-expansion is a rising interest rate. It exercises a repressive influence, the pressure gradually increasing as the demand for credit enlarges, until the rate becomes high enough to curtail expansion. Some borrowers who want accomodations at five per cent will reduce their requirements when the rate reaches six, and some who will see a profit in using money at six, will drop out when the rate reaches seven. It is better to stop a runaway horse by heading him up a hill than by running him into a stone wall. In the one case he will get discouraged and slow down, while in the other there will be a smash-up. Under the competitive conditions which govern the banking business in the United States, the banks are accustomed to lend money to their depositors at practically uniform rates as long as they can make loans at all, and then abruptly shut down entirely. This is the smash-up policy. With a gradually rising rate the business man will hold in check any inclination to enlarge his liabilities and make an effort to reduce them, and he will have time to do so. There is an enormous difference to him between being obliged to pay high rates and not being able to get accommodations at all. By this policy the climax of a boom period is rounded over, expansion checked and contraction brought about without the shock which is unavoidable where credit is supplied freely at a uniform rate until there is no loaning power left to be used. The uniform rate in this country is due to the competition of the banks for favor with depositors, and it is useless to expect any other policy to be followed unless a strong central bank becomes an important factor in the money market. Such an institution would have reserve powers for making loans after the individual banks were exhausted and when its aid was called for it would have control of the rate.

The foreign state banks are able to exert an important influence upon the movement of gold by means of the interest rate, an advance of the rate furnishing an inducement for the payment of gold upon obligations due the bank, and a reduction serving to relax its hold upon the metal. But even beyond this aid, in time of crisis the credit notes of a central bank may be allowed to flow out and take the place of gold in circulation, where the outgo of the latter is imperatively required, thus saving the industries of the country from shock. The Bank of France parts with important sums of gold for the relief of other countries without reducing the amount of its own notes in circulation, and hence without direct influence upon trade in France. Indirectly it protects and benefits conditions at home by helping to avert trouble in neighboring countries with which France is intimately related. In this country we lack the machinery for thus controlling the movement of gold or protecting our industries from injury when the basis of our system of credits is disturbed by conditions elsewhere.

The system of independent banks without a central organization is costly to the country in requiring an unnecessarily large gold reserve. In this respect the United States makes an especially poor showing of efficiency compared with Great Britain and a poor showing even when compared with the continental countries. The gold reserve of England is practically all in the Bank of England, and at the present writing is about $165,000,000. This is the capital by means of which the gold standard is maintained, and upon which the credits of the country rest, as other banks use Bank of England notes for their reserves. In the United States we have about $900,000,000 of gold in the treasury and some $250,000,000 or $300,000,000 in the banks. If this vast store of gold made credits in this country more stable and secure than in England, there might be a valid argument for it, but our system has practically broken down twice in the last fifteen years, while a general suspension of cash payments in England is unknown. This gold reserve is a part of the country's capital, and the interest on it is a part of the cost of doing business in this country as truly as are our transportation charges. If the latter were higher than in foreign countries there would be great agitation about it. An examination of the situation in every other country will show that a central bank can be made to conserve and protect the gold reserves of a country and accomplish an important economy in this respect.

There is strong support for the central bank as a medium for the issue of an elastic currency in the experience and conclusions of foreign countries. One by one all of the other important countries of the world have adopted it. Even Switzerland, which had been served by twenty-six well-managed banks of issue, and where regulation by reason of the small area over which they were located, would seem to have been comparatively simple, in 1905 established a central bank to take over the function of issue. By centralizing the issues in one strong establishment, which in its organization is made a semi-official institution, this important function is performed not only immediately under the eye and with the participation of the government, but with complete publicity and subject to the criticism of the entire financial world. The weekly statements of the great state banks of foreign countries are scrutinized by the press and by economists, bankers, and critics of the whole world. Manifestly these conditions are radically different from those surrounding note issues by thousands of individual and unrelated banks scattered over such a country as the United States.

The central bank could amply meet the needs of every part of the country by rediscounting the bills receivable of local banks or loaning upon such collateral. The notes issued in making these loans would have behind them, first, the original borrowers; second, the endorsement of the local bank, and third, the responsibility of the central institution. The latter should have authority to examine local banks applying for loans, and by so doing would serve as an additional supervising authority over them and exert a most salutary influence upon the whole banking situation. When fully organized the bank should have a dozen or so offices located in the more important cities of the different parts of the country, in order to be convenient of access for the local banks of all sections. Instead of being adapted only for times of panic, like most of the plans now offered, this system of note issues would be useful at all times and serve to equalize interest rates over the different seasons of the year, and to some extent over the different sections of the country. The notes of the central bank should gradually become an important part of the common circulating medium of the country, eventually taking the place of the present national bank circulation as the public debt is retired and increasing in volume with the growth of the country. They would be a more economical medium of exchange for the country than gold or gold certificates. They would not, like a recognized emergency currency, be in themselves a sign and symptom of financial trouble. As soon as country bankers were accustomed to the regular practice of rediscounting currency bills receivable and it became recognized as a perfectly legitimate method of aiding local customers, instead of being regarded as discreditable, the central institution would prove itself to be of great service to every part of the country, and particularly to those sections which produce the great agricultural staples but lack the free capital to handle them every year. They can furnish unquestionable security and the central bank could supply all the currency needed.

Let it be supposed that the capital of the central organization was fixed at $100,000,000. That would be only about 11 per cent of the capital of the banks in the national system, and of course the amount for them to raise would be much reduced if state banks were permitted to become shareholders. This capital might be invested in high-class bonds, as in the case of the Bank of France, thus serving simply as a guaranty fund. The central organization might then issue its notes for say $300,000,000, and through its constituent institutions exchange these for gold or gold certificates, thus establishing its gold reserve. If, now, it was authorized to issue notes upon the single condition that it should always keep a reserve equal to $33^1/_3$ per cent of the amount outstanding, it would have the capacity to put out $600,000,000 of uncovered notes. This would be the measure of elasticity obtainable upon a reserve of

$300,000,000. It might take some time to acquire that reserve, but as the stock of gold in the country increased, and as the central institution became in fact the recognized custodian of the country's reserves, it would become greater. A part of this note-issuing capacity could be in current use. In time it might acquire almost a monopoly of certain classes of commercial paper, notably that based upon staple commodities and secured by public warehouse receipts. It is in the annual movement of this class of commodities that the greatest fluctuations in the demand for money occurs, and the greatest need for elasticity is felt. The central institution could finance the movement for local banks without any disturbance to the money markets, and upon terms that would effect a saving to the producers. When the crop movement was over, and the loans based on the moving product were paid, the bank would be back to a liquidated condition and ready to expand again as its assistance was needed. With its power of note issue it would be able to liquidate any of its constituent institutions that required help. The method by which clearing-house certificates and checks were issued during the late crisis affords a complete illustration of the operations of such a system.

The usual objections to a central bank can be met in the organization. The opposing arguments in this country are usually based upon the experience of the old Bank of the United States and the political controversy which developed it. That bank was under strictly private management, entered into active competition with all state and private banks, and as the latter held no relation to it but that of competitors, it was not strange that opposition was fostered. Clearly, another central bank, if established, should be organized into the national banking system and be a part of it. The capital should be furnished by the individual banks and it should do business only with them. The stockholders should be represented in the management by a board of directors elected by territorial districts. By this system every section of the country would be represented on the board and likewise all shades of political opinion. The government should be represented in the control of the bank by the principal officers of the Treasury Department. The plan of the Bank of Germany where there are two boards, one chosen by the stockholders and one appointed by the government, has worked satisfactorily there. The combination of government authority with the practical advantages that inhere in private ownership and management is thus secured. With such an organization, and the publicity that is necessarily given to the conduct of such an institution, the probability that it will be used to promote private or partisan interests is too remote to be seriously considered. The executive officers should be elected by the stockholders' board, but subject to approval by the government directors. The experience elsewhere is that trained bankers of known ability and the highest character are chosen.

Finally, all other plans for reforming our monetary system leave the relations of the United States Treasury to the money market precisely what they have been, and this furnishes one of the strongest reasons for preferring the central bank plan. In all other countries the receipts and disbursements of the treasury are handled by these institutions. The revenues go directly into the bank, the payments are checked out of it, and whatever surplus there may be remains in the bank, like any individual or corporate balance, subject to commercial use. With our independent treasury any surplus of revenues over expenditures remains in the vaults of the treasury until the Secretary volunteers, in his discretion, to deposit it in such national banks as he may select. During the fiscal year ended June 30, 1907, the government's revenue exceeded disbursements by the enormous sum of $87,000,000, and in order that this drain might not paralyze industry throughout the country, it was necessary for the Secretary to make deposits in this amount. The transactions of the treasury are increasing every year with the growth of the country, and the discrepancy between receipts and disbursements may reach very large figures. It is important that these sums be kept in circulation, but highly desirable that they be handled and distributed by an automatic system instead of by the voluntary and arbitrary action of the Secretary of the Treasury. The determination of when deposits shall be made, and in what cities and banks they shall be made, inevitably involves that official in the most unpleasant kind of criticism, and he should be relieved from it entirely by the adoption of a different system. At this writing the treasury deposits amount to about $250,000,000, scattered in 1,250 banks. During the last two months of 1907 the declining revenue receipts made it necessary for the treasury to replenish the working balances in its offices, but with financial conditions in a state of intense strain it was impracticable to draw on the deposits and an issue of certicates of indebtedness was forced.

When all considerations are brought into the account it is found that a central bank answers the demands more completely than any other plan proposed. It is comprehensive and final, while other plans are incomplete and temporary. It is in harmony with the development of the times toward higher organization, and it has the advantage of being a working success elsewhere.

A CENTRAL BANK AS A MENACE TO LIBERTY

By George H. Earle, Jr.,
President Real Estate Trust Company, Philadelphia.

The solution of the problem of a central bank, with power to control the currency of the United States, to be at all adequate, must depend upon and be controlled by ultimate political principles. The same principle that underlies the never-ending conflict between the advocates of a strong centralized government and what are called "states rights," governs this question. Taught in the school of experience and adversity, the early English and American patriots learned the salutary lesson that the development of peoples, as well as their happiness, depended more upon liberty—that is, the power to control and govern themselves, rather than to be controlled or governed by anybody else—than upon any other single thing; and they, therefore, in drafting our Constitution, always viewed government as an evil made necessary by the weakness and defects of human nature, and never extended it beyond that necessity.

Under the plan of freedom, of self-reliance, self-dependence, self-government, we have become the greatest, the happiest, the most powerful people of the world; but notwithstanding these proofs to justify the work of the Fathers, we have more and more concluded that we could have done a great deal better. We are rapidly tending in the opposite direction, which must inevitably destroy liberty by vesting all discretion in some form of central government, rather than in the people as individual, independent entities.

Starting with the theory that government but existed because of the defects of mankind, and was but an evil wherever it exceeded the necessity of restraining evil human tendencies, we have now reached the higher light wherein we produce schemes of regulating everything, until liberty is but a name, and we govern ourselves by theories entirely independent of the characteristics of the people to whom our systems are to apply. It is difficult to find any one, nowadays, who has not some "counsel of perfection," and founded on it, some theory of government that would work perfectly with a perfect race, in whom neither self-interest nor passion existed and that, consequently, did not need any government at all.

Among the radical reformers, the Nihilists are much more logical than the Socialists because neither system would work with human nature as it is, and no system would be required with society so constituted as to make their theories practicable. But the strangest development of modern times is that, concurrently with the wildest theories against restraint, popular opinion is forcing more and more restraint upon individual freedom of choice, that is liberty, year by year; until business and everything else is being stifled by the almost incomprehensible mass of liberty-restraining laws and regulations. I suppose to-day the American people imagine they are a free people; but in the sense that they were free in the days of such lesser lights as Washington and Franklin and Jefferson and Hamilton—that is, free to work out their individual independence and salvation, unrestrained by any unnecessary laws—they are veritable slaves. Under the leadership of the wonderful statesmen of our age who, not confined to either party, have a legislative panacea for everything and are making us happy by passing statutes binding us hand and foot on one subject after another, all the while increasing public officials and public burdens to enforce them, real liberty—liberty in the sense that each man must, to the greatest possible extent, be given free discretion to work out his own salvation—is rapidly ceasing to exist.

But, it may be asked, what has all this to do with a central bank? My answer is, everything. For this country to be great, happy and prosperous, it must be really free; and freedom, just as justice, consists in distributing power and opportunity as equally as possible, and as much controlled by everybody's individual, untrammeled discretion as the nature of things will permit. I am as much opposed to undue centralization as I am to Socialism or Nihilism, and for an identical reason: They are all enemies of liberty; and it is only through liberty that mankind can reach the highest forms of development.

Now, what effect will the central bank idea have upon these principles which I have thus, I fear crudely, stated? If it will tend to an equalization of power and opportunity, if it will tend to placing, as near as may be, equal powers and equal restraints upon everybody, it is consistent with the spirit of our institutions and the purpose of our civilization; and if not, being against them, it *must* prove injurious. There is not the slighest doubt that the placing of the power, in the hands of a single man or a small body of men, to issue at his or their uncontrolled will the currency needed for trade, would prove, at least for awhile, an effective measure. I doubt whether it would permanently prove so, because all history has shown that, in the result, the placing of too much power anywhere, in its rotting-out effect upon peoples, has decreased efficiency. There is no more doubt that the creations of dictatorial powers, for short periods, in such times, for instance, as those of Cincinnatus, were effective measures, than that they were enormously and even to the point of destruction, inefficient as a permanent system, under the Emperors. Where a single man can temporarily wield the effective powers of millions of men developed by freedom, he is nearly irresistible; but the continuance of that power, by destroying the value of the units, brings down the totality of strength, even to the point of extinction.

And so, if we had a central bank, with the power of practically fixing the price of every commodity in the United States, of aggregating to itself, or those who exercised its powers, just such proportion of the production of wealth of the Union as they saw fit; it would, in a little while, tend to a selfish use that could be neither effective nor beneficial; and, like all other forms of inordinate and unequal power, it must become destructive of any republican form of government. Procuring efficiency, not through evolution and development, but tyranny and inequality, is a means that all human experience has demonstrated to be fallacious.

In my own judgment, our currency, like our other evils, is to be remedied by greater freedom and greater distribution of choice and discretion, rather than by a greater centralization or unequal distribution of power. It is a fair question to ask, therefore, whether conceding, as I do, that there is not sufficient elasticity of the currency, I can suggest no remedy, but would prefer present evils to those resulting from the creation of too centralized a power; and the answer, to my mind, is obvious. The true remedy must be found, not in placing our dependence upon the discretion of any one, but of every one,—that is, again, upon liberty, rather than upon power and restraint.

We have a very satisfactory system of regulating the investments of saving funds, that demonstrates that a line of investment can be easily named in advance by statute that would be a safe basis for currency, as well as for investments, as at present. In my judgment, therefore, starting with government bonds, which should always be given a great advantage in currency issues, as that strengthens the credit of the Union, a list could be made upon which any bank—and, again, the banking laws should be equally open to all—could issue its notes. A system of taxation on such issues should be so regulated as to make inordinate inflation impossible; but there should be no limit to the amount of circulation when the tax had reached a point where it must become unprofitable to the banks that take out that circulation, for then they would only take it out to save the commercial community and their customers, and for no dangerous purposes. And this currency so available should be available at the discretion of *everyone*, without the necessity of consulting any government official or any government bank. I do not want to be misunderstood. The restrictions as to security should be full and ample, the taxation large *and on an ascending scale*. The currency should be made absolutely safe—as safe as it is now—and the tax collected with such a system, if that tax were properly applied, would not only be sufficient to guard every holder of a note against loss, but would yield large revenues beyond this to the government in relief of general taxation. With such a system worked out in detail, governmental power would not be increased, the danger of depriving the people of any part of their self-developing discretions would not be incurred.

This, as I have said, is all very crudely stated by a man who has no opportunity to work out details or polish sentences; but it recommends itself to me, because my whole study of the constitutional history of our peoples has convinced me that liberty is the greatest friend of mankind, just as inordinate powers are the greatest danger. We shall go higher and better and further, following out, in all our troubles, a liberty as wide as human defects will permit, than hunting around for benevolent despots in any form, for I do not believe that even benevolent despots ever do real good, because, however well they may govern, the injury to communities inflicted by taking from them the educational benefits of self-government is incalculable.

Both religion and science teach us that human advance is but to be gained through the slower methods of development of character—the one calling it "regeneration," the other "evolution" or "survival of the fittest," or what you will. Even in politics and by politicians these principles are at times heeded—even now we are daily told that the policy of the government is to educate the Filipinos to a fitness for self-government, by gradually entrusting them with widening discretions, increased liberty, as this increasing liberty fits them for more. This is true political science—*the only way*—these men are unquestionably Filipino patriots, but what we need is American patriots—men who will "make way for liberty" here as well as there; who will disregard popularity, if need be, that they may abide with duty; and not piecemeal exchange our birthright of freedom for a mass of legislation and restraint only really effective for evil. Many, many injurious steps have already been taken toward the inequality and slavery of over-government and benumbing restriction. But all of them will be but a drop in the bucket, compared with the dangers of placing in the hands of the few the entire discretion as to the volume of the people's money.

In an ultimate analysis, our country is only languishing for liberty and equality; and I do not hesitate to predict an instant return of prosperity, at the first moment that honest men can make investments and conduct important affairs, without the necessity of having a lawyer at their elbows, who, indeed, in most cases, refuses the responsibility of advising what all the accumulating mass of restrictive legislation means. We have evils enough in this direction, without restraining the people's right to determine when or to what extent their interests require a further supply of currency on a sound basis. If we really need all the present restrictive mass of regulative legislation, we are, like the Filipinos, already unfit for freedom; and if, as I believe, we do not, by taking away our personal right of choice, of initiative, we are being educated as rapidly as possible, to be like them, unfit for self-government.

If these hasty suggestions should chance to reach the eye of someone with a faculty for leadership, and a love of his country, and invite him to battle again for freedom, to expose the shams under which the people are losing their freedom, under the pretense that their enemies are being punished, I can promise him the ultimate approval of his countrymen. For that, in the end and permanently, only comes to real patriots, those that unite instead of divide, those that love instead of hate; those that, putting aside "malice, envy and all uncharitableness," understand the potency of "good will to men," while never forgetting that "eternal vigilance is the price of liberty."

CLEARING-HOUSE CERTIFICATES AND THE NEED FOR A CENTRAL BANK

By William A. Nash,
President Corn Exchange State Bank, New York.

It is universally conceded that the present time is highly favorable for financial reforms. The great danger is that the remedies will be so numerous, and the diagnoses so different that the patient will linger and suffer. The doctors will assemble and discuss, but, I hope, to use an old story, we shall not have to wait for the autopsy to find out what is the matter. The brief contribution that I shall make towards the solution of the riddle of American finance is based on my life as a banker in the City of New York, and what I have learned in my relations with the New York Clearing House.

When I read the numberless projects for our financial well being that fill the newspapers, our book shelves, and the Congressional Record, I ask myself on what do these men base their plans, on observation or actual contact and familiarity with the subject they talk about, and I must conclude that much of it is spun out of their inner consciences. The best known of our Revolutionary orators said, "I have but one lamp by which my feet are guided, and that lamp is experience," and I propose to use experience in the space at my disposal.

When I was a youth I saw the panic of 1857. The failure of the Ohio Life and Trust Company created a general distrust of banks all over the country. It began as always in New York. Good and bad banks alike were attacked by uneasy depositors and they were fought to a standstill and compelled to surrender. The situation, however, soon righted itself because the depositor had no safe place to keep his gold and soon returned it to the bank he had been distrusting. We had not at that time that ingenious device known as the safe deposit vault by which banks and trust companies now connive at their own decimation.

The Civil War was marked by no less than four banking and currency crises, in 1860 and 1861 when the war broke out, and in 1863 and 1864 when the unwonted demand by the government and the creation of a new currency, threw the machine out of gear. To remedy these derangements the most useful and effective device ever known in our finances was created. I mean the loan certificate of the New York Clearing House. It was invoked four times during the war. In 1860 we issued $7,357,000; in 1861, $22,585,000; in 1863, $11,471,000 and in 1864, $17,725,000; in all about $58,000,000, which was an immense sum for those days. These certificates played an important part in the war for the Union. While the banks and the people were subscribing for bonds with an uncalculating patriotism, the clearing house stepped in with the loan certificate and steadied the business situation by enlarging credit and preventing the panics that always follow excesses of any kind in the commercial world. The effect of the loan certificate is instantaneous. Credit is expanded upon the soundest basis known to experienced financiers and the sufficiency of that basis and the volume of the supply is regulated by bankers and men of business whose character and antecedents are the strongest guarantees of the honest and wise administration of the trust.

You are all familiar with the basis of the loan certificate, yet a short re-statement may not be amiss. Every bank in the clearing house has the privilege of coming to the loan committee with its bonds, loans and commercial paper and obtaining seventy-five per cent of their value in loan certificates of all denominations with which they can pay their debts to each other. They naturally bring their very best assets, so that in our experience in New York not a single dollar of loss has ever followed our many issues. Again, quite naturally, the banks are desirous of getting back their gilt-edged assets, and the process of redemption and retirement begins almost as soon as that of issue. The practical part of this expansion is very interesting. The loan committee can issue many millions in a single morning. There is no necessity of waiting for a slow press to print the circulation. We, in New York, make them in denominations of $5,000, $10,000, $20,000, $50,000 and $100,000. We have not yet come to $5 and $10, but the present crisis has shown the need and desirability of such small notes.

After the war there ensued a season of speculation and development, stimulated and fostered by the currency created for the needs of the government and the people during the rebellion.

This lasted till 1873, when the inevitable reaction came, resulting in that famous panic. Here the clearing house hesitated a day or two before issuing certificates, and a hesitation even of that time is a very serious matter. When a house is on fire you do not want to walk your horses before the engine. In 1873 we issued $22,400,000, and the time between their first issue and their final retirement was about four months. Then for eleven years there was no occasion for their use, until the Marine and Metropolitan Bank panic in 1884, when about $25,000,000 were put out and again four months was the limit of their existence.

In 1890 we felt the effects of the Baring panic and issued sixteen millions, and in three months they were all retired. You remember that in England in the Baring panic the joint-stock banks, under the guidance of the Bank of England, substantially adopted our loan-certificate system for their own relief. In 1893 the certificate performed its most useful and brilliant service. We had a crisis of great and varying elements. The silver question and the end of a long period of commercial extravagances conspired to produce an emergency that none of us will ever forget. The New York Clearing House acted with superb energy and promptness. We issued more than ever before, $41,500,000 in certificates were signed. Their issue began June 21, 1893, and the last one was cancelled November 1, 1893—again a period of about four months. In 1895, when the Venezuelan message was issued, the clearing house forestalled and prevented a panic by authorizing the usual issue, but the very promptness of their action prevented the use of any of them by the banks.

Now we are in 1907, and the same agency is at work, and you all realize how effective it has been to still the waters, so we can shift the cargo and repair the ship for its further voyage. When the history of 1907 comes to be written it will be a very interesting and instructive chapter on finance. It is very well known that there was a well meaning but injudicious attempt to handle the situation without resorting to the time-honored remedy. The clearing house delayed their issue several days out of respect to the very distinguished gentlemen who hoped to get along without their use, but finally the pressure of events left no alternative. I believe that much was lost in the few days of hesitation that preceded the actual authorization of the issue, and that a more prompt action would have warded off some of the subsequent occurrences that we have had to deal with. Why there should have been any hesitation in using a remedy so long and so often tested I have not yet been able to discover. It has again taken its place as a great corrective and conservator—and to its use we owe the subsidence of the more active features of the panic. Excessive and alarming rates for money immediately disappeared, and the banks were able to extend credits to their customers—knowing that the source of supply was at their command.

This is the history of this great financial agent. It has been used eight times in the past half century always with relief instantaneous, without loss, and with a period of existence from the first one put in circulation to the last one retired of about four months. As an emergency currency it is incomparable—as an asset currency it is the only one that I can conceive of, that is not fraught with dangers, greatly in excess of the benefits to be derived from it. The secret of the whole matter lies in the character of the men who have managed it. I know of no more unselfish, devoted and patriotic body of men than the Clearing House Committee of New York City. It has always been so, it is so to-day. The business public have unlimited confidence in their judgment and wisdom. The clearing-house certificate is the embodiment of all these qualities and constitutes it as the most absolutely valuable of all our financial devices.

Naturally the whole country follows New York. It is not vainglory to say so—it is a fact. The clearing houses of all important and unimportant cities follow its lead. The panic is arrested—credit is assured—the dangers of extreme distress are eliminated, and the country finds time to readjust, repair and resume.

Now, in view of this practical lesson, so often repeated, and always successful, what should be done, and what do we learn. The first lesson is, that expansion of credit and the issue of currency can best be done by some central responsible power and not by a series of small powers scattered all over the country. The first process gives confidence, the second will be followed by no confidence. I do not hesitate to say that an asset currency authorized on a forty per cent or any per cent basis and intrusted to five thousand banks all over the country will surely result in a cataclysm of disaster, unparalleled in the history of the country. On the other hand, if we organize in a permanent form the clearing-house loan certificate now issued so fitfully and at a time when a crisis is already upon us, we will provide the country in advance with a remedy, just as the New York Clearing House prevented a panic in 1895.

But how shall we get this permanent form? To answer this we come up against the most venerable and senseless prejudice that obstructs the national well being, the dread of a great central bank. This hobgoblin of the politician and the business man has walked the earth for seventy years. The panic of 1837 has not yet been forgotten although the country is radically different from that day. We must kill this bugaboo and exorcise this ghost.

The average politician is more afraid of it than any other public question except the tariff. The magnetic needle does not point more unerringly to the pole, than the clearing-house certificate points to a great central bank, and dodge this as we may, and as we probably shall, finally we will come back to it and hail it as the solution of all our difficulties. But such a bank must be organized properly or it will never gain public confidence. The government must be represented in it, but the dominant power must reside in a board of directors to which the most eminent bankers and business men shall be chosen. Let the clearing houses of the great central reserve cities nominate those directors and you will have a governing body as influential and as respected as the Supreme Court of the United States.

Give us in good faith such a central bank with such management and with such functions as the clearing houses all over the country have to-day, and you will put us on a par with England and France and Germany with their great benign national banks. To-day we are suffering for lack of such a consolidated, salient power. Our energies are scattered and inharmonious. They ought to be solidified and present an unbroken front. The clearing houses and the loan certificate point the way with an unmoving finger, and until their persistent and insistent demand is heeded and crystallized, we shall not have permanent peace in our business or financial world.

It is hardly necessary to say that political or partisan features in such a bank will be fatal. To give it authority and respect it must be divorced from party politics. Its creation on the basis I have outlined will be a work of patriotism as signal as any we have ever performed as a people. I believe that the necessities of the hour, necessities that recur with every monetary disturbance, will dictate a sound solution, and, without doubt, this conference and others like it will be important steps to that end.

FOREIGN EXPERIENCE A GUIDE TO CURRENCY REFORM

By Isaac N. Seligman,
Of J. and W. Seligman & Company, New York.

As Governor Hughes has admirably stated in a recent address before the Civic Forum in New York, "The quality of the administration of local officers lies with the citizens of the community. They will be good or bad as the public insists on the former or is content with the latter." So it is with our currency problem. It lies with us whether or not we shall have a sane, practical and intelligent currency system. The great difficulty at present appears to be an overzealousness on the part of everyone to offer some panacea for the present unsatisfactory monetary condition. That the present crisis is not wholly due to our perverted and immobile monetary system is possibly true, at the present time the crisis might in a great measure have been mitigated if we had got our own house in order. Until we have a stable and elastic currency system we will be constantly subjected from time to time to the present acute and humiliating financial conditions like those which now confront us. Fortunately the present crisis has fully opened the eyes of the entire country to the importance of some currency legislation, and has convinced the people—not Wall Street, but the West and South as well—that some method must be found to prevent a recurrence of the present acute and distressing crisis and depression. Our national banking system worked fairly well during the war period, but the panics of '73, '90 and '93 have awakened us from our dream, and have brought home to us sharply the need of some elastic and responsive currency system.

Congress has not been able to enact as yet any permanent plan of relief, and this has been chiefly due to two causes, first, the fact that our legislators have not as yet given sufficient time and thought to an intelligent, scientific and responsive currency plan, and second, their inability to unite on any definite plan. The country now imperatively demands some intelligent relief.

We have had numerous tentative schemes offered; the Baltimore plan, '97, the Carlisle and Fowler bills, the McCleary and Gage bills, the Monetary Commission Indianapolis Convention, '98 plan, and later the New York Chamber of Commerce and American Banking Association plan, '06. All these plans practically provide for asset currency, *i. e.*, the right to issue emergency currency based on a certain proportion of their bond-secured circulation, having first lien on the assets of the bank, subject to a tax to provide for any possible losses. The weakness of these last two plans has always appeared to lie in the fact that the graduated rate of interest paid is not sufficiently high to insure the rapid redemption in normal times, and also not sufficiently high tax rate to prevent the issue of notes in instances of urgent requirements. It is likely that some measure of relief would have been afforded to the country if any one of these plans had been in operation during our present crisis; at the same time it would serve only as a palliative and not as a cure.

There is truth in the statement of Lord Rothschild when he characterized this country as financially uncivilized in its banking methods.

M. Siegfried, Senator of France, my valued friend and an expert on financial questions, has only lately stated that the French may be reproached with a lack of the spirit of commercial enterprise which characterizes the Anglo-Saxon, but it must be recognized that in financial science they can give lessons to America which can profitably be guided by the counsels of eminent French financiers and bankers. Gentlemen, this is true and we may candidly make the confession.

The spectacle presented to-day by our currency to the civilized banking community of the world is simply shameful.

Emergency clearing-house certificates have been issued in nearly all large cities; cashiers' checks and scrips have been circulated to take the place of currency, and all devices imposed on the community to take the place of currency which has been hoarded. The United States Government in the person of Secretary Cortelyou has come to our assistance in the present juncture and has helped the situation by depositing nearly all treasury funds in the banks, and has also devised other measures of relief to prevent an actual cessation of business. He has ably fulfilled the task.

These measures only accentuate more pointedly that in order to obviate such temporary provisions for relief measures some permanent, logical and intelligent plan must be thought out.

When confidence is shaken it is inevitable that the community will tend to hoard gold and currency. Such conditions are substantially unknown abroad. Crises and panics are of course possible everywhere; no monetary system can be devised to prevent a panic; but an intelligent and elastic banking system can always be relied on to keep off widespread disaster. It is true, gentlemen, that it is difficult to induce a community to depart from its old traditions, but the time has now come when we should be guided by such foreign systems as have been working satisfactorily for centuries, and which, in times of panics and stress, have fully met all expectations and conditions. I refer to some central banking system.

This is the system existing in France, England, Germany and in all European countries. It is needless to dwell on the methods and machinery of the central banks in European countries. Although not *owned* by their respective governments they are practically controlled in a moral sense as the government is represented in its board of directors and the governmental policy substantially rules. Flexibility and safety are the two essentials in currency problems, and the former is absolutely wanting in our present system.

The fact that the government bank was used by President Jackson for political purposes should not close our eyes to the importance of now re-establishing such a bank purged of many of its then evil features, and surrounded by reasonable safeguards and legislation. I do not propose to enter into any details as to the plan of a central bank and only give an outline. This central or government bank should be owned jointly by the government and the national banks. The Secretary of the Treasury and the Controller of the Currency should be represented on its board. The treasury funds should be deposited with the central bank, and the government bank should have power to issue notes in certain proportion to its gold reserve or capital. As it is likely that the sole right of such note issue would be opposed by our national banks, and any radical plan for a government bank would probably not pass Congress at present, an alternative plan has been admirably developed in an article lately published by Mr. Paul M. Warburg, a banker in New York, under the title, "Plan of a Modified Central Bank." This appears to me the most practical of all plans yet suggested, as it provides for a government bank limited chiefly to transactions with the clearing houses of the various cities. The bank is to deposit funds with clearing houses and national banks against United States bonds and other approved security as well as commercial paper and bankers' bills with proper margins. The plan has the great advantage of providing additional currency, and the rate of interest to be fixed by the board and the banks would have been able to rediscount their paper and to obtain bank-notes to relieve the currency strain. Clearing-house certificates issued in different centers in times like the present make it well nigh impossible to arrange for transfers of money from one city to the other. Just now drafts on Philadelphia, Boston and other banks sent for collection are being returned on the plea that momentarily it is impossible to remit New York exchange. Each city issuing its own clearing-house certificates under the present abnormal conditions practically builds a Chinese wall against other centers.

There is no doubt in my mind that if we had a modified central banking system the forced closing of the Knickerbocker Trust Company could have been avoided as it could readily have hypothecated on the first day of its run 25,000,000 or more of its good securities with the central bank, and the heedless run on other trust companies would have been prevented.

At the time of the failure of the Leipziger Bank in Germany (an institution which had been grossly mismanaged by its directors, many of whom, by the bye, are now serving states prison sentences) there was a run on one of the largest banks in Germany. This bank turned over some 75,000,000 Rmx. of discount, *i. e.*, commercial and bankers' endorsed three and six months' bills, to the Reichsbank, which in turn, furnished the funds and the run ceased at once.

The Bank of France has been shipping gold to England, taking in payment finance bills, and it is prepared to ship us gold against commercial bills, thus proving what substantial aid can be rendered by a central or government bank to other countries. What better proof is needed of the value of central or government banks in such emergencies. It is needless for me to dwell longer on the importance of some such central bank, and I refer you to a careful study of Mr. Warburg's article which has been published in pamphlet form.

I realize that it is no easy task to educate our representatives in Washington to a radical change in our currency system, and any hasty action in providing a remedy which, to our lawyers and statesmen, may seem to be complicated and technical in its machinery will likely end in defeat. I fully realize that there are many well-intentioned citizens who are honestly opposed to any extension of credit-issuing powers by our national government. The country must now realize, however, that some currency measures must be enacted by Congress to mitigate the present evils. The emergency currency plan proposed by the New York Chamber of Commerce and modified by the Bankers' Association has been under discussion for a year. As already pointed out such a plan advocated by many students and business men has been strongly opposed by many thoughtful, practical financiers. Has the thought ever occurred to you, gentlemen, what would have been our present situation if this plan had gone into effect, and if all of the additional emergency circulation provided for by such plan had been issued during the summer months when money was stringent? Would we have been much better off now, and would we not be again appealing to Secretary Cortelyou for help?

I am pleased to note that Mr. Ridgely, the Controller of Currency, has just strongly declared that a large central bank of issue is the proper solution of this problem. Let us do our utmost to study it from an unbiased standpoint, and let us give our support to such plan as will give us permanent relief and place our currency system on a par with those of all civilized nations. Congress will shortly convene and many currency plans and bills will be introduced. It is the duty of every citizen to have the courage of his convictions, and not to temporize with the problem, and to bring pressure to bear on his representatives in Washington in order that an intelligent, rational and comprehensive currency bill shall be enacted. As our noble President, Abraham Lincoln, has said, "Let us dare to do our duty as we understand it." We will confer thereby a lasting blessing on our country.

RELATION OF A CENTRAL BANK TO THE ELASTICITY OF THE CURRENCY

By Jacob H. Schiff,
Senior member of the firm of Kuhn, Loeb & Company, New York.

The storm which has recently broken loose has not yet entirely subsided. The causes of the financial trouble which has come upon us are hardly understood yet, but with typical American courage, we are looking already for the remedies, not only to retrieve what has been lost, but also in the desire to gain protection for the future against the recurrence of a disaster similar to that which has overtaken us.

The physician who would want to find proper remedies must first know and understand the origin and seat of disease. We should therefore, carefully inquire into the causes of this crisis, which has come upon us almost in the midst of an era of unprecedented prosperity.

To me it appears the answer is not surrounded by much doubt. The origin of the crisis is to be sought mainly in too great an expansion of enterprise of every nature, both corporate and individual. This, as a consequence, caused a straining of financial requirements, and particularly of credit, beyond legitimate limits. "Prosperity run riot," expresses perhaps best the condition, which existed and which brought us to our present plight. Nothing is probably more largely responsible for the breakdown, than the obstinacy with which new enterprise was fostered; in the enormous volume of business which was developed in every quarter, even in the face of a steadily increasing money scarcity, and, further, in the stubbornness with which it was insisted that the country was so prosperous and rich that particular caution and prudence were not needed, the march forward was made with a totally unprotected rear.

Look only at the number of so called trust companies, called into being during recent years, which under a false flag bid for and attracted millions upon millions of deposits, to be used not for legitimate banking, but for illegitimate promotion, from which funds could not be withdrawn when their return was asked for by those to whom they belonged. And not alone in financial quarters had developed this prosperity madness—in industry and commerce, prudence had likewise been thrown to the winds. The manufacturer or merchant, when warned that he was expanding too rapidly—that he was straining his credit in too great an extreme—scornfully rejected the advice to go at a slower pace. His answer almost invariably was that the demand for his goods was great; that his customers were in good condition, and that anxiety and complications existed only in Wall Street. He overlooked the fact that the basis of the large volume of business, which he thought he was doing legitimately, rested, to a great extent, upon the very over-expansion of enterprise represented by the inflation of corporate securities he was criticising, and that the collapse in security-values would have inevitably to be followed by a breakdown of the general business of the country.

And now, as a panacea for the ills under which we are suffering, a sudden demand has sprung up throughout the country for currency reform. Proposed by the few who foresaw and foretold what was coming, as a partially protective measure, the warning to reform the currency was, when it was sounded, decried as a scheme of banks and bankers for selfish purposes, and became almost lost, like a cry in the wilderness. Had it been heeded, the present crisis might not have been entirely prevented, but it would never have gone so far in upsetting the business of the entire country. Let it be said, however, and well understood, at this juncture, that currency reform, imperatively needed though it is, can in itself never furnish protection against the consequences of unsound and illegitimate business methods. A properly constituted circulating medium, can furnish in times of financial difficulty a palliative, but without simultaneous reform in the unsound practices, which, to so considerable an extent, have governed the affairs of financial institutions, currency reform will be of little avail.

The Governor of the State of New York, with statesmanlike sagacity, has just taken action with a view to correct the shortcomings, which have been laid bare. A commission has been authorized which is to report upon a revision of the banking laws of the state, action such as this should be particularly welcomed.

I shall not enter here into a discussion of any particular scheme for the reform of the currency, to that I have already furnished my quota upon earlier occasions. So much has already been said, written and published upon the question of currency reform, so many propositions have been made by all sorts and conditions of men as to methods, ways and means, through which is to be secured what is needed, that with the meeting of Congress just upon us, it had perhaps now best be left to the wisdom of our national legislators to embody some measure into the form of law, which to them shall appear to best satisfy the demands and needs of all sections of the country. Congress will, in any event, have at its disposal rather a long catalogue of currency reform plans to select from.

What we are most in need of at this juncture, is the enactment of a measure, through which the circulating medium can be made to respond promptly to a *diminished* money demand. We have, during recent years, with the enormous expansion in enterprise and general business, no less than in the few weeks since this crisis has come upon us, been rather liberal in the creation of paper currency. If we are not careful, we shall before long find ourselves face to face with so large a volume of paper money, that gold will inevitably be driven out. Otherwise, some day, when this mass of paper can no longer be digested, we may be face to face with a depreciation in the standard of credit of the government, as expressed by the market value of United States bonds.

Expansion of the currency, when legitimately needed, will, under proper provision for this, take care of itself, if only in any scheme for the reform of the currency, proper provision be first made for the promptest possible contraction of the circulating medium, when its volume becomes too large for legitimate requirements. Nor is it likely that any scheme for the issuance of a circulating medium will prove permanently satisfactory, which shall clothe 6,000 banks with the privilege of issuing credit currency, each for itself. No matter how completely the safeguards proposed to be established through the creation of a guarantee fund may appear to be thrown around the exercise of this privilege, a single default, even if only temporary, would likely create prejudice against the entire volume of the outstanding currency, and no chances, however remote, ought to be permitted to be taken in this respect. Whether it shall be a central bank—if authority for the establishment of such can be obtained—or a central association of national banks, to possess no other function than to issue to the banks the circulating notes, to which, under the stipulations and restrictions to be imposed by law, they shali become entitled, there is needed a central authority, to properly control and determine the issuance of any circulating medium, based upon assets. Such a controlling central authority should and can best be constituted by the banks themselves. An association of national banks would, for the time being, at least, probably prove more acceptable and practicable than a central bank. The latter, to be of real advantage, would not only have to receive a monopoly of the privilege of issuing circulating notes, but would moreover have to become the depository of the funds of the government. It would have to undertake the discounting of commercial paper, both for banks and for individuals, and it is not likely that the country is, at this time, prepared to sanction so far-reaching a scheme, which of necessity would revolutionize our entire national banking system.

The one lesson, at least, which we should learn from recent experiences, is that the issuing of clearing-house certificates in the different bank centers, while no doubt it helped locally, has also worked considerable harm. It has broken down domestic exchanges and has paralyzed to a large extent the business of the country. Far better, as has recently been semi-officially proposed, that the government itself should become authorized to issue, in times of great stress, legal-tender loan certificates through the clearing houses, to the banks, upon appropriate security, and with stringent automatically acting provision for quick redemption. Undesirable as such an expedient may be in itself, from an economic point of view, it would at least prevent a breakdown of domestic exchanges, such as we have just experienced, resulting in a large premium upon currency—or, to state it more correctly, in a large discount upon bank checks. We have seen how the suspension of cash payment by the banks in the leading centers, compelled us to throw upon Europe the burden of financing our cash requirements almost entirely during the important period of the crop movement, and forced the Bank of England into a position, so mortifying for us, where it had to assume this burden almost single-handed.

Comparisons are odious, but sometimes they are also profitable, if properly applied. Let us at least hope that the severe and costly lessons we have received, shall not be permitted to be forgotten, until we have found appropriate remedies. It is certain, if this be done, we shall emerge from the momentous period, through which we are just passing, freed from many handicaps, which still impede us in the financial, commercial and industrial aspirations which we possess—fortunately be it said—both as a nation and as individuals.

DIAGNOSIS OF THE WORLD'S ELASTIC CURRENCY PROBLEMS

By Andrew J. Frame,
President Waukesha National Bank, Waukesha, Wisconsin.

Professor Sumner, in his "History of American Currency," said, in summing up the doctrines of the celebrated bullion report which was submitted to the House of Commons in 1810, "Its doctrines are the alphabet of modern finance. They are no longer disputable." Another section reads, "In the presence of a panic the duty of the bank is to discount freely to all solvent parties."

I take it, a smile will pass over the features of my banker friends the moment their ne'er-to-be-forgotten practical experiences of 1893 and 1907 loom up as a nightmare before them again. How can a bank discount freely to all solvent parties when its panic-stricken depositors want all the cash the bank holds, and very quickly too?

What is the meaning of the word panic? The Standard Dictionary says: "The prevalence of unreasoning and overpowering alarm in financial and commercial circles, or in both, leading to sudden and stringent restrictions of credit and great shrinkage in values, and precipitating mercantile and banking failures; often the precursor of a financial panic."

Panics undoubtedly cannot be wholly prevented except in theory by such dreamers as Bellamy, who support the impossible idea that human nature can be changed, speculation cease and optimism be eradicated from Anglo-Saxonism.

Notwithstanding this, I am a firm believer in ameliorating panic conditions, both as to their frequency and as to their severity. But how? My answer is:

(1) By studying history and profiting by the experiences of the past.

(2) By passing conservative and sound banking laws, and then enforcing them.

(3) By giving as much elasticity to the circulating medium as can be safely attained, but never to reach an amount which engenders

doubt in the public mind as to its redemption in the world's standard of value.

As to the problem of conservative and sound banking laws and enforcement, the national banking system is the safest and best this country has known. It is a well-known fact that some states have good laws, some lax laws, and others none at all. It is also a matter of gratification to know that many states are working along the line of betterment. With thirteen thousand million dollars due to not less than sixteen million depositors in the banks and trust companies of the United States, in order that conditions leading to panics and their paralyzing effects may be minimized, is it not the clear duty of our statesmen to perfect, as far as possible, conservative laws on sound lines?

These laws should demand ample capital paid in, limitations on loans to any person or firm, and reasonable reserves according to whether deposits are payable on demand or on time. As space forbids further pursuit of this phase of the subject, I will confine myself to the knotty "elasticity problem."

The Elasticity Problem

The history of the progress of nations during the earlier centuries shows an evolution from the use of bullocks as a medium of exchange, as recorded in the Bible, to the later period of barter by the use of beads, nails, skins, shells, etc. In later centuries, in addition to the limited quantities of coin, the banks have indulged more or less in the issue of so-called asset or credit currency, dubbed "coined credit," by Professor Sumner, as well as currency secured by various kinds of collateral. All makeshifts have in the most advanced and progressive nations given way to the world's standard of value—gold, until to-day those progressive nations which issue currency do so largely through one great central bank. The immense coin reserves of these great banks practically make their currency issues a gold certificate payable on demand. They are practically banks of issue and not of deposit, as will be seen by the table which follows. These banks issue more or less currency in excess of coin held, but some are based on government securities, as in England; all their loans are amply secured and of a quick liquid character. In view of these facts, these great banks, with immense capital, coin reserves and small liabilities, are in a position to expand currency issues to move crops without distrust, and under panic conditions "to discount freely to all solvent parties," also to furnish extra cash to banks with which to meet the insane demands of frightened depositors, thus preventing general paralysis of trade and industry in all branches, which is inevitable if forced liquidation takes place which is so destructive to labor and capital alike.

I am firmly convinced that if the United States had lately had a large central bank of the banks, commensurate with our greatness, notwithstanding the colossal pyramid of credit which we have been building, we might have been let down by easy stages, instead of falling off from the top of the building, producing a jar that seems to have shaken the whole commercial world. I am also convinced that if the last Congress had authorized asset or credit currency on the American Bankers' Association plan, when the 1907 spasm struck us, our troubles would simply have doubled.

Let us briefly diagnose the reasons therefor by a comparison of European conditions with those of the United States as they exist to-day.

Capital, specie, circulation, etc., of the great European single banks of issue on or about June 30, 1906.

TABLE NO. 1.

In Millions.

	Capital.	Circulation.	Deposits.	Total specie.	Loans.
Imperial Bank of Germany	$28.9	$412.0	$149.9	$211.1	$345.7
Bank of Austria-Hungary	41.9	376.5	31.6	299.2	189.8
National Bank of Belgium	9.6	136.5	16.3	24.1	124.8
National Bank of Bulgaria	1.8	8.6	17.0	7.6	11.9
National Bank of Denmark	6.8	34.9	.8	27.2	13.7
Bank of Spain	28.9	305.7	134.2	200.2	154.4
Bank of Finland	1.9	18.2	4.2	5.2	11.7
Bank of France	35.2	908.8	189.1	803.4	255.3
National Bank of Greece	3.9	23.1	23.4	.4	21.6
Bank of Italy	28.9	213.3	90.6	152.7	91.6
Bank of Naples	11.6	66.6	16.1	32.8	34.5
Bank of Sicily	....	14.8	10.6	9.1	10.9
Bank of Norway	3.5	21.4	1.9	8.0	12.0
Bank of Netherlands	8.0	113.0	2.5	57.1	59.8
Bank of Portugal	14.6	74.5	29.3	13.7	26.5

	Capital.	Circulation.	Deposits.	Total specie.	Loans.
National Bank of Roumania........	$2.9	$43.1	....	$15.0	$25.2
Imperial Bank of Russia...........	28.3	591.0	$109.8	455.9	208.3
Bank of England	70.8	146.8	280.3	187.8	156.8
National Bank of Servia	1.1	6.6	.6	4.5	2.3
Royal Bank of Sweden	11.0	52.2	12.2	20.6	37.0
Total 20 banks	$340.5	$3,567.6	$1,120.4	$2,525.6	$1,793.8

The foregoing, practically banks of issue and not of deposit, show demand liabilities versus coin reserves, as compared to the national banks of issue in the United States, as follows:

In Millions.

	20 European banks.	137 U. S. Nat'l banks.
Circulation outstanding	$3,567.6	$517.9
Deposits	1,120.4	5,898.0
Total	$4,688.0	$6,415.9
Coin reserves held	2,525.0	464.4

Mark the fact that the great issuing banks of Europe hold 54 per cent of demand liabilities in coin, as against only 7 per cent in the United States.

Mark that, as records show, the total currency issues by all the other great European banks of deposit on June 30, 1906, approximated but 150 millions of dollars, and when the charters of the four German banks and those of Great Britain and Switzerland expire, the right to issue currency by all of them being doomed, there will be few left in Europe to issue currency except these twenty great centralized banks and the new bank of Switzerland.

Do not the foregoing facts conclusively show that the progressive European nations each have one great issuing bank, which might be termed the governor to the engine, expanding and contracting automatically without distrust, because they have immense coin reserves and quick assets, and that the issue of credit or any other kind of currency by small, independent banks has practically been totally abolished all over Europe?

This result in Europe was evidently brought about through the dear school of experience. Let us touch upon a few most salient instances abroad.

France

John Law, nearly 200 years ago, after being turned down by the keen Scotchmen, captured the French people with his plausible populistic inflation scheme, and history tells us that France did not recover from its terrible effects for fifty years. The statesmen of France, not content with the John Law experiment, in consequence of business depression in 1789, instead of manfully waiting for a natural return of better days, in response to the popular clamor for "more money," sought to take a short cut to prosperity by issuing heroic quack doses of fiat money for several years in succession. Just as soon as the effects of the first issues began to show symptoms of a reaction upon business, another larger dose was administered to the already staggering patient.

The statesmen of France, in most eloquent perorations—which might be likened to some in these latter days—swayed the multitude so far that the intoxication for assignats grew until nearly 40,000 millions of francs were outstanding in 1797, a sum aggregating nearly three times our whole circulating medium to-day. With one fell swoop the French nation repudiated the whole issue.

The Bank of France was organized in 1800 with about $6,000,000 capital, which at various times was increased, until to-day it is about $35,000,000. It has power to issue notes with the following prerequisites, as dictated by Napoleon: "The notes shall be covered either by coin held by the bank or by notes secured by collateral or by notes signed by three responsible persons." A strong effort was made at that time to give the right of issue to the banks generally in France, but Napoleon answered in substance,—It is easier to watch one bank of issue than it is to watch great numbers. His logic exactly condemns the American Bankers' Association plan to-day. What has been the result in France? The foregoing table shows:

	Millions.
Circulation	$908.8
Coin on hand is 88½ per cent of circulation	803.4
If we add the deposits of	189.1

to circulation outstanding, the bank still would show about 73 per cent of coin against all liabilities, as against 7 per cent for the national banks of the United States. We must not forget also that the $255.3 millions of loans are of a much more liquid character than are those of the national banks generally throughout the United States.

The Bank of France has been managed with such consummate skill that even during the Franco-German war the depreciation of its notes was only 4 per cent. It also during the past century rendered invaluable aid by loaning coin to the Bank of England during several crises in Britain. The bank, with its vast coin reserves and quick assets has been enabled to loan freely to all solvent parties under panic conditions, thus undoubtedly preventing panics at times, and it has steadied the financial convulsions in France for a century. The Bank of France has had the sole right of issue in France since 1848. Its uncovered currency averages about 120 million dollars, which indicates no currency inflation in France as against 900 millions in the United States to-day.

England

The Bank of England was chartered in 1694. Although it was of great value to mercantile interests in several financial crises, yet as the bank had limitless authority to issue notes, and there was no rule as to coin reserves from 1694 to 1844, at which date Peel's Act "gave the Old Lady of Threadneedle Street the straight jacket she has worn ever since." Bagehot, in his classic work entitled "Lombard Street," says, "This unbridled authority was in more than one instance used with the extremest unwisdom, so that devastating panics followed hard upon the heels of the reckless speculation which too great facilities for borrowing had engendered." Such dearly-bought experiences ought to warn us against easy methods of inflation. English statesmen battled for a quarter of a century with the subject of whether gold was at a premium or a redundant quantity of Bank of England notes at a discount. The question was finally settled in 1816 by the adoption of the profound "Bullion Report of 1810." The integrity of her gold standard of payments has since been maintained with a fidelity that commands the admiration and confidence of the whole world, to the extent that London is the world's clearing house, and practically all the nations of the earth pay tribute to Britain. The paramount question to us is, how soon will New York City displace London as the world's clearing house, if we keep on injecting more non-standard currency into our already redundant currency issues?

Under Peel's Act, the banks of Great Britain in 1844 were restricted on issues of bank notes to the amount then outstanding by the banks then existing. Seventy per cent of the right of issue of those banks which have closed since 1844, has reverted to the Bank of England, thus reducing the total uncovered issues allowed to banks in general, all of which are subject to the unlimited liability act as to note issues, to the small sum of approximately £8,000,000, and has increased the issues of the Bank of England since 1844 from £14,000,000 to about £18,175,000 based on securities. All other issues of the bank are covered with gold coin or bullion, thus making the notes practically gold certificates and giving the Bank of England the sole right of issue in Britain. The total uncovered issues in Britain average about $120,000,000, of which $90,000,000 are Bank of England notes based on government securities. Scotch banks, so much harped about, can issue but £2,676,350 uncovered notes. As extraordinary troubles require extraordinary remedies, in order to ameliorate some of the calamitous panic conditions which have overtaken Britain, history says, the Bank of England in 1847, 1857 and 1866, after the panics had paralyzed her progress, on the assurance of the government officials that no prosecution would follow, suspended the bank act as to issuing notes only on the deposit of a like amount of either coin or bullion, and it issued notes to the banking department on deposit by it with the issue department of ample securities. This was an unlawful act, giving elasticity to the currency, but it placed the banking department in an easy condition to "discount freely to all solvent parties." Again, in 1838, the bank borrowed £2,500,000 from the Bank of France during panic conditions, and in 1890, during the Baring troubles, she borrowed £3,000,000; besides £2,000,000 from outside sources, and the panics were stayed. The Barings failed for $105,000,000 and yet their indebtedness was liquidated by the Bank of England with the aid of other local banks without general suspension of cash payments as experienced in the last months of 1907 in the United States. The apparent necessity for these extraordinary acts was that the country had reached a commercial crisis where good securities could not be sold for cash. Suspension and consequent ruin were staring sound commercial houses and banks in the face.

In each case the action of the bank afforded instant relief and doubtless saved hundreds of millions of dollars to tottering houses unable to meet payments except for such relief. As soon as the pressure was over the illegal issues were retired.

These unlawful acts were parallel to our clearing-house certificates, except that clearing-house certificates have but limited use, whereas the Bank of England notes satisfy the insane demands of frightened depositors and give sufficient elasticity to meet necessary demands for loans to solvent parties so that the wheels of commerce be not stilled. Should the Bank of England be legally empowered to relieve extraordinary pressure on the same lines as in 1847, 1857 and 1866 before paralysis takes place, the benefits undoubtedly would be incalculable. Nearly all political economists criticize this feature, which seems to be the only material defect, without which the Bank of England would be ideal in practically all respects.

Germany

With the exception of only four banks, which are allowed to issue say eighteen millions of dollars of uncovered notes—and these privileges are doomed—the Imperial Bank of Germany monopolizes that right. The bank is allowed to issue now about $112,500,000 uncovered circulation under certain restrictions. Any excess over that sum must pay 5 per cent interest per annum to the government. This excess issue is the only true method by which to obtain relief under panic conditions, as the interest rate will certainly retire the redundant currency as soon as the pressure for funds is over, thus preventing inflation.

It is a noteworthy fact that the Imperial Bank of Germany has raised its discount rate to 7 per cent but once in thirty years, except during our panic of 1907, when its rate was raised to 7½ per cent. It is also a noteworthy fact that during that thirty-year period the bank issued such 5 per cent taxed currency 121 times as a relief measure under pressure. The Austro-Hungarian bank did likewise under similar conditions fifty-five times in the past eighteen years. In the face of the fact that interest rates are lower there than here, such 5 per cent taxed currency automatically expands under pressure and contracts as soon as the pressure is over, thus preventing inflation. This fact defies theory and upsets the absurd claim that a high taxed currency imposes such a tax on commerce that banks will not use it. Germany's uncovered currency averages say $150,000,000, which is a wide contrast to our $900,000,000 and over to-day.

But enough. These details and the foregoing table are conclusive evidence that elasticity in Europe, by an evolutionary process, has been achieved without producing distrust or inflation.

Issuing Currency is not a Necessary Banking Function

Further, it does not seem to be a necessary function of banks generally in Europe to issue currency at all. As state and other banks in the United States issue no currency, I assert the special privilege ought to be abolished as to the other third, as soon as the banks owning the abnormally low rate 2 per cent interest bonds can obtain payment for them. Banks holding them run great risk of material depreciation should the government for any cause be compelled to issue large sums additional. Let the United States sell its bonds strictly on their merits, as every other nation does. This result ought to be brought about by a slow evolutionary process, and under natural economic laws the channels of circulation would automatically fill the vacuum created with the world's standard—gold. Adam Smith gives an illustration in point in his "Wealth of Nations"—"Money, like wine, must always be scarce with those who have neither the wherewithal to buy or the credit to borrow it. Those who have either will seldom be in want of either the money or the wine which they have occasion for, and a country that has wherewithal to buy gold or silver, will never be in want of those metals." I am strongly impressed that the United States has the wherewithal to buy all the gold and silver we need for a basis of our circulating medium. If some of the poor sections of our country are short on circulation, is it not because they are also short on collateral or wherewithal to buy it?

The Lesson from American History

Let us turn to the United States without specific reference to the disastrous results of continental currency in the eighteenth century, which might be excusable, as the birth of the nation was at stake. The "History of Banking in all Nations" says, in referring to all banks of issue from 1739 to 1841, "The estimated losses on their circulation were 18.1 millions of dollars." Again, on page 337—under "Free and Safety Fund Banking in New York State," "the notes of twenty-five of them were rejected, and all the safety fund notes were at a discount." Again, "In December (1840), it was reported that few brokers would buy the notes of any free banking association," "and the notes of many of the safety fund banks of the interior are regarded with great distrust." John J. Knox, in his history says that from 1789 to 1864 "the probable losses to noteholders were about 5 per cent per annum." Further, the circulating notes of the state banks were subject to violent expansion in times of confidence and sudden contraction when distrust occurred. The runs on the banks were not made by the depositors (for they were few), but by the noteholders.

The pages of these authorities, as well as many others, are strewn with proofs of the sickening details of losses to noteholders, caused by bank issues, some based on credit and others based on various collaterals, clear through the eighteenth, and even past the middle of the nineteenth century. Because much of the currency issued during the latter period was secured by collaterals instead of being a pure credit currency, the nineteenth century experiences lessened materially the comparative losses to noteholders everywhere, but still they were calamitous in results up to the end of the "wild cat" days in the United States. Two generations have passed since then wherein no man has lost a moment's sleep over his absolutely secured national bank notes. We ought not to need, like children, to be told to keep away from the fire. We ought to profit by the experience of the past before trouble overtakes us again.

That word "elasticity" is a sweet morsel to play upon the credulity of an innocent public. It has worried the political economists of all ages. Its ghost still stalks forth in this enlightened day.

Panics and the Monetary Standard

All property was measured in depreciated currency in 1865, when gold was 100 per cent premium and over. Then the premium began to decline year by year, and all property in proportion, until 1873, by which time values had shrunk to about one-half of the prices of 1865. This process undermined all prosperity and was the underlying cause of the panic of 1873. After specie payments were resumed in 1879 confidence and prosperity revived with a bound, and they have been forging onward and upward ever since at a pace which has astonished the world. A campaign of education has been constantly and successfully waged toward the establishment of the world's standard—gold—upon an unequivocal foundation. Distrust of our standard halted us from 1893 to 1896, when the repudiators were repudiated, and since that date the Gold Standard Act of March 14, 1900, has been written into our statutes, and thus the battle of the standards has been practically won. There are two links missing to complete the chain. They are the elimination of some of our redundant soft money issues, and the adoption of some sound relief measure when panic threatens.

Since 1896, when confidence was restored as to the integrity of our standard of value, the wave of prosperity has been almost continuously rising higher and higher. Under the impetus of rapid fortunes acquired by some Napoleons of finance since 1896, who foresaw that a swelling tide of prosperity was at hand, the get-rich-quick fever intoxicated the many. Nature has been generous in her bounties to us, thus aiding in the development of the rising tide. Another force has been the immense increase in the world's production of gold for the past few years, which doubtless has stimulated the activities and credit expansion of the whole commercial world.

During this period our credit system has grown to collossal proportions. As shown by official statistics, our banking power has increased from 5,150 millions of dollars in 1890 to nearly 18,000 millions of dollars on January 1, 1908, which nearly equals the banking power of the rest of the world. The individual deposits have more than trebled in that period, which largely represents actual not fictitious capital. The gigantic general statistics of our wonderful progress and present condition are too numerous and too well known to repeat.

During the past ten years our circulating medium has doubled in quantity (from 1,500 to 3,000 millions of dollars), until, as a basis for this mighty superstructure of credit, we hold the following amounts of the world's standard of value, that stands through storm as well as sunshine:

TABLE NO. 2.

In gold coin, say	$1,600,000,000
In addition we have:	
In silver (say one-half fiat) about	700,000,000
Legal tender notes	346,000,000
National bank notes, about	690,000,000
	$1,736,000,000

By way of comparison with the most progressive nations, permit the following approximate:

TABLE NO. 3.

In Millions.

	Gold.	Silver.	Uncovered currency.	Per capita circulation.
United States holds	$1,600	$700	$900	$35.50
Great Britain holds	559	117	116	18.08
France holds	1,032	400	120	39.94
Germany holds	917	200	180	22.18

This table shows the United States has nearly as much silver as Great Britain, France and Germany combined, and more than twice as much uncovered currency as all combined. It also shows a per capita circulation almost equal to that of France, where cash instead of checks is used much more extensively than here. This per capita circulation is also so far in excess of either Great Britain or Germany that the redundancy of our currency must be apparent to all.

The Barometric Signal

In view of all these facts, even before the explosion caused by the wild speculation and pyramid banking of the Heinze, Morse, Thomas, etc., outfit; in view of the fact that a high interest rate the world over is the sure barometric signal that the great pyramid of credit has grown beyond the limits of prudence; in view of the handwriting upon the wall as recorded by all the standard authorities on political economy that optimism had outrun conservatism, and that the primary cause of our troubles is over-speculation, I will only quote in proof from one standard authority. Professor Sumner, in his "History of American Currency," tersely sums up the case as follows: "Over-speculation is speculation which outstrips the capital of the country;" further, "When we lose our heads in the intoxication of our own achievements, look on currency anticipations, which are only fictitious capital, as if they were real, use them as already earned, build other expansions upon them, then we bring a convulsion and a downfall; some time or other a liquidation must come: . . . then credit breaks down and there must be a settlement, a liquidation, a dividend, a new start." I say, in view of all these facts, I cannot understand why the powers that be in the great American Bankers' Association, who ought to be the leaders in conservatism, should undertake to bring about a sentiment to commit this country to eighteenth century fiatism again, by the issue—on top of our vast volume of soft money issues—of over two hundred million dollars of asset or credit currency, as a starter only, according to one of the most aggressive advocates, with only 5 per cent secured and 95 per cent fiat, under the plea of providing an elastic currency to move the crops, notwithstanding crops could not move faster, as transportation facilities have been taxed to their utmost for years. Who wants to move the earth to-day and lie idle to-morrow?

The American Bankers' Association Plan

The American Bankers' Association plan, boiled down and put in cold type, can fairly be diagnosed in this way:

(1) National banks (none others need apply), big and little, in city or country, can indite a letter as follows:

> Comptroller of the Currency,
> Washington, D. C.
>
> Please send to this bank the $25,000, $50,000 or $100,000 of asset or credit currency to which it may be entitled; keep 5 per cent of it on deposit as collateral security; express the other 95 per cent to us, and we will return the same to you at our pleasure, plus 2½ per cent per annum.
>
> Very respectfully,
>
> ....
>
> Cashier.

(2) The Comptroller of the Currency shall designate numerous redemption cities conveniently located in various parts of the

country. Through the agency of the banks in such cities adequate facilities shall be provided for active daily redemption of credit notes. (The advocates of this redemption plan now admit it inpractical, so no answer to it is necessary.)

(3) A bank (credit) note is essentially the same in principle as a deposit payable on demand. This is an amazing conclusion. Political economists say, "Coined credit" in the shape of I O U's. issued by banks is fictitious capital. A deposit generally represents actual capital, so no further argument on that point seems necessary.

In reply to the foregoing I issued the following five challenges in a debate before the State Bankers' Association of Minnesota in July, 1907, in response to John L. Hamilton, ex-President of the American Bankers' Association, who advocated the American Bankers' Association plan, to wit:

(1) I respectfully challenge any member of the currency committee or any advocate of asset currency to point to a single progressive country on the earth where small, independent country banks are allowed to issue currency backed by only 5 per cent collateral, the remaining 95 per cent of such currency being purely fiat.

(2) I challenge any man to prove that easy methods of issuing currency have not been discarded in all progressive nations.

(3) I challenge any man to disprove the fact that, with but few exceptions, where charters have not expired, in all progressive nations, only great centralized banks, with very large reserves and rigid restrictions as to loans, are allowed to issue currency at all, and the right to issue is limited under rigid restrictions referred to later.

(4) I challenge any man to prove that the method of redemption proposed—which the asset currency advocates claim as the crucial test of success or failure—has any parallel on earth, or affords any practical assurance that it will work under our banking system.

(5) I challenge any man to prove that "a bank note is essentially the same in principle as a deposit payable on demand," or that "it resembles in character . . . a current deposit liability of the bank."

After the debate what was the verdict of the Minnesota jury? The answer is found in the condemnation of the American Bankers' Association plan, as will be seen by the passage of the following resolution unanimously:

> WHEREAS, The prosperity of our country is due in a large measure to the absolute confidence of our people in our present currency, be it
>
> *Resolved*, That while we are strongly in favor of some well-secured method to relieve monetary stringencies that will not produce inflation, yet we are unalterably opposed to any plan or change in our currency that does not afford absolute security; hence we do not look with favor upon the plan proposed by the American Bankers' Association committee.

Later, after listening to John Perrin, President of the American National Bank of Indianapolis and member of the association currency committee, in favor of its plan, the State Bankers' Association of Wisconsin passed the same resolutions with only two dissenting voices. Still later,—after the meeting of the American Bankers' Association at Atlantic City, when, with practically an empty house and under discreditable conditions, the plan was apparently endorsed,—the State Bankers' Association of Indiana, after a full debate on the same subject, where O. A. Watts, President of the First National Bank, of Nashville, Tenn., took the affirmative, and I had the honor of the negative side, notwithstanding a strong effort to table the resolutions by able representatives of the American Bankers' Association, the Hoosiers turned down the plan by indorsing in full the same resolutions.

These facts, representing the judgment of bankers when a fair hearing could be had, indicate clearly that the banks of the country generally are against fiat money. The committee of the American Bankers' Association evidently doubted the soundness of their own proposition, as is evidenced by the self-indictment contained in the following quotation taken from the Atlantic City currency committee reported to the convention:

> In all our recommendations principle has, to a greater or less degree, been subordinated to practicability. We have recommended, not what we believe, in the light of experience and existing conditions, to be best for the interests subserved, but what, in the light of existing political conditions, we believe to be attainable, not what was best, but what we might reasonably hope to obtain.

President Roosevelt's Opinion

President Roosevelt clearly grasps the essential weakness of the plan, as will be seen in the following quotations from his last message to Congress, when he refers to the absorbing currency question:

> We need greater elasticity in our currency; provided, of course, that we recognize the even greater need of a *safe and secured* currency, . . . Provision should be made for an emergency currency. The emergency issue should, of course, be made with an effective guaranty, and upon conditions carefully prescribed by the government. *Such emergency issue must be based on adequate securities approved by the government and must be issued under a heavy tax. This would permit currency being issued when the demand for it was urgent, while securing its retirement as the demand fell off.*

The Aldrich Bill

And now comes the Finance Committee of the United States Senate with a bill, in all its essential features, demanding absolute security for all issues to prevent distrust; with such a high tax—6 per cent—as will bring such currency out only under stress, and will surely retire it as soon as pressure is over, thus preventing further inflation. These essentials seem to be ignored under the American Bankers' Association plan, because, under it, the currency, if issued, would be practically unsecured and would still further inflate our circulation.

The American Bankers' Association plan undoubtedly would arouse distrust in the minds of the masses, especially in troublous times, when it is of paramount importance to allay distrust. When panic is on, as the asset currency advocates claim a deposit is the same thing as asset currency, and local depositors are clamoring for cash, why will not eighty million holders of such currency demand coin on their notes, thus more than doubling our troubles under panic conditions? This is exactly what occurred in fiat money days. Taint our currency issues with a breath of suspicion, and our prosperity will be undermined as by an insidious disease. Even the first lien on assets, which would make the currency secure, but which would rob the depositors, is eliminated under this plan, thus increasing general distrust. Again, as the quick redemption theory will not work, which is now admitted by asset currency advocates, does any sane man believe that any bank in the United States with a right to issue asset currency, practically without collateral, paying only 2½ per cent per annum for the use of it, in the face of a 6 to 10 per cent interest rate clear through 1907, would not have kept out the whole permissible amount for the profit in it, thus stretching the rubber currency to the limit. Under such conditions the reservoir would have been empty when the panic of 1907 struck us. Would not the very object sought, relief under panic conditions, be defeated? The result would simply spell inflation, and inflation spells disaster. Such currency would expand, but not contract. The currency committee seems to have lost sight of the fundamental principle of Gresham's law. Britain, after a campaign as long and as bitter as ours over the Gresham Law, and the expulsion of her gold by the injection of too many bank notes into her circulation, unequivocally adopted the gold standard in 1816. The integrity of that standard, as against the uncertainties of other national standards, has been maintained with a fidelity that commands the confidence of the whole world to such an extent that London has long been the world's clearing house. Will New York soon win that position if we inject an additional quantity of inferior currency into our circulation?

A wise man buildeth his house upon a rock, but the foolish man upon the sand. When the rain descends and the floods come and the winds blow, the wise man's house falleth not, but as to the foolish man's house, great is the fall thereof. Is not this a perfect simile to apply to the building up of the superstructure of our credit system upon a sound metallic currency for a foundation as against the shifting sands of a credit currency? The pages of history are strewn with proofs that when the great instrument of exchange is deranged, all trade, all industry, is stricken as with a palsy. That instrument of exchange recognized by the world as the solid foundation that does not totter when the storm rages in its severest intensity, is the only foundation for a prosperous people to rest upon and to-day our coffers hold sixteen hundred million dollars of it. This is a billion dollar country, and we need these resources. This gold has come to us since 1873 in the natural course of trade, in response to the well-known principles of the Gresham law and monetary science, as expounded by Adam Smith, Ricardo, Jevons, Sumner and many other eminent economists, and as also clearly set forth in what Professor Sumner dubs the most important document in financial literature, "The Celebrated Bullion Report of 1810 to the House of Commons." I have quoted these maxims before, but deep-seated error requires repetition of them again and again. Summed up these principles are:

(1) The cry of all ages is for "more money."

(2) Rich countries will have all the coin they need, providing no impolitic act of legislation interferes to force it out of circulation by the injection of inferior currencies.

(3) When the coin in any country exceeds the effectual demand, no vigilance of government can prevent its exportation.

(4) It is the province of government to settle the quality question of money, and the needs of commerce will settle the quantity.

In proof of the above maxims, history says, Chinese walls, jails, shot guns or hanging did not prevent exportation of coin, and in these modern days the object lesson of the exportation of more than thirty millions of gold in May and June, 1907, in the face of high interest rates and the plea of the asset currency advocates for "more money in the United States," is more potent than pages of logic. Let us fix the "quality" question and stop tinkering with the "quantity," as the needs of commerce will settle that.

With over 1,700 million dollars of soft money in the United States to-day, would not the injection of 200 to 300 millions of inferior asset or credit currency drive the same amount of gold out under the Gresham Law, thus undermining our metallic foundation for our great credit superstructure? Let us bend our energies to increase our metallic foundation and reduce our redundant soft money issues, if we would avoid trouble as far as human ingenuity can accomplish it. The only true remedy to compel conservatism is to penalize over-expansion of credit, instead of adding an unsecured asset currency stimulant. Throw a life line out to the over-confident, and he will be swimming beyond his depth continually.

Asset Currency Fallacies

The asset currency advocates are continually referring to the Canadian and Suffolk systems, also isolated cases in Indiana, Louisiana, Iowa and other states, as parallel to our conditions. Their arguments are as full of holes as a skimmer, and so-called parallels are as closely related as the Equator is to the North Pole. They are also continually quoting general European branch banking methods as systems for us to adopt. I stand with the masses of bankers of the country against a few great central banks owning all the banks of the country, because under that system, the branches practically pay no taxes where they are located; there is no real board of directors; few, if any, stockholders to whom dividends would be declared; in short the system simply skims the cream from the country towns to enrich the exchequers of the great centers, as is conclusively proved by the abnormally large profits made by the great central banks owning such branches.

A National Reserve Bank

As our independent banking system has worked wonders in the upbuilding of our hamlets and cities; as the quality of our money is unquestioned, and the quantity more than ample for normal conditions; as Europe has more nearly solved the "Elastic Problem" with fewer objectionable features than any plan yet suggested; why cannot we reject as entirely unnecessary the general branch banking feature, continue, if thought best, the United States sub-treasuries, with modifications as to cash holdings, and bring about elasticity through a national reserve bank. Such a bank would be owned by the banks of the country, and thus the profits would be theirs.

The capital stock might be $50,000,000 and be taken in sums of not to exceed 5 per cent of the capital of each subscribing bank, to prevent monopoly. The Comptroller of the Currency, Secretary of the Treasury and United States Treasurer should be members of the Board of Directors. The National Reserve Bank, if such we may call it, might have authority to issue up to $250,000,000 of national bank notes, as an experimental limit, under a tax of 6 per cent to drive it home as soon as pressure is over.

Again, under strained conditions, or when frightened depositors are demanding cash, and solvent merchants and manufacturers are calling for loans to pay bills and keep the wheels of commerce from being stilled, where is the banker that will not temporarily provide cash, if possible, at 6 per cent or even a higher rate, if necessary, instead of slaughtering sound securities in a hard market? Do not many bankers when capital demands exceed supply, get rediscounts now, and is much comment made unless rediscounts become excessive?

No interest should be paid upon deposits, nor should loans be made upon stocks, thus giving no aid to the stock gambling element. Such issues should be loaned only under conservative restrictions on quickly convertible securities. I believe if such a bank had been open in October, 1907, the panic with its train of evils might have been avoided, because the gamblers who were the cause of the outbreak could have been refused aid and thus have been weeded out as a future menace. The sound and solvent banks of New York could have been furnished with all the cash needed, because they have ample sound collateral. The country calls for balances in New York could have been promptly met with cash. Suspension of cash payments then would not have been necessary, and the result would have been that the whole country would not have been compelled to restrict cash payments nor to issue clearing-house certificates.

On the other hand, if the American Bankers' Association's 2½ or 3 per cent currency plan had been authorized last winter, the full limit would have been out for the profit in it when the panic struck us. The National Reserve Bank plan will accomplish the object sought in an absolutely sound manner; it will checkmate locking up cash, as was done some months ago by a "bear" to the extent of $5,000,000 in an attempt to bring on another Black Friday onslaught. The banks of the country will not hoard money in excess of needs, because they will know relief is at hand if needed.

It will not lead the bankers of the country generally to further expand their credit and thus feed the fires of speculation which have already gone beyond the limits of conservatism. It will not drive gold out of the country under Gresham's Law by the injection of any more inferior currencies, which must be avoided if our standard of values is to be maintained, and if New York City is ever to become the world's financial center. It will furnish cash at times when necessary to move the crops, or under panic conditions to loan to all solvent parties, that the wheels of commerce be not stilled and general paralysis result. The rate of interest will automatically drive home the extra issues as soon as confidence is restored; inflation will not result and the machinery will be ready for the next urgent call; 10, 20, 50, 100 per cent money will be unknown; the Secretary of the Treasury will heave a sigh of relief from pressing importunities; every bank in the country, whether national, state, private, savings or trust company, will, directly or indirectly, get relief if entitled to it. In the matter under discussion clearly the trend of all progressive countries is toward the concentration of the power to issue currency.

If this plan cannot be accomplished, then the plan brought out by the Senate Finance Committee, as a modification of Treasurer Treat's plan, will accomplish the relief sought, by the issue of extra currency amply secured to prevent distrust, with a tax sufficiently high to prevent inflation. These requirements are the main essentials.

A third plan, which would accomplish the relief sought, would be the issue of currency based on clearing-house certificates, such as have been lately issued. Such certificates should be deposited with the United States Treasurer as security for such issues. It is cash that fills demands and kills panic.

I prefer the central bank plan, because the machinery works smoothly and automatically, more so than under the second plan, and much more so than under the third. All three are sound, and infinitely better than asset currency, which will only produce distrust and inflation. Confidence upbuilds, distrust destroys. Statesmanship alone should reign. Whatever plan is provided, our standard of value should never be tarnished, because distrust breeds panic. On the contrary our currency should be above suspicion, that confidence, the great bulwark of all progress may be ours to the fullest possible extent.

PANIC PREVENTIONS AND CURES

By Henry W. Yates,
President Nebraska National Bank, Omaha, Neb.

The United States has periodically been afflicted with financial cataclysms, popularly called "panics." They have marked turning points in trade and development, where prosperity and "good times" have given place to liquidations and "hard times."

Other countries have not experienced these almost regular revulsions, and from this fact it may be inferred that they are unnecessary here. Wild and speculative business enterprises and dishonest or reckless banking and trading cannot be entirely prevented or guarded against, but their effects ought to be confined to the interests directly concerned, and not permitted to affect entirely distinct and different affairs. And, on the other hand, the peculiar character of our business operations—their great and varying magnitude, moving forward at one time with astonishing rapidity and then subsiding with equal suddenness—clearly shows that the conditions here are very different from the staid and orderly movements in the business of the old world.

Panics or trade revulsions, therefore, may be unavoidable with us at some periods, or at some stage of business progress. Those which have occurred in the past can be clearly explained by natural causes, and it therefore may be believed that no panic of the character described can occur unless there is some natural cause or explanation for it.

In the present disturbance there does not seem to be a single natural cause to account for its occurrence. We have had no crop failures—that prolific cause for financial depression. On the contrary, our crops of all kinds have been unusually good and the prices of farm products taken together have never been better. The reduction of farm mortgages in the West and the growth of bank deposits in rural communities indicate remarkable strength in material wealth.

Our mines for both the precious metals and the crude products have been operated to their fullest capacity with the largest production ever known, our factories and mills have been unable to fill their orders, and business of all kinds has been expanded apparently upon safe and conservative lines to an extent never before known. Immigration of laborers from Europe has been enormous, exceeding any period in our history, and yet all classes of labor have been fully employed at good wages. This situation is in strong contrast to 1892 or thereabouts, when Coxey's army of the unemployed marched on Washington. Judging from these and many other facts, it may well be doubted if this is a panic similar to those which have formed such memorable epochs in our national history.

It may prove to be more of the character of the spasms which occurred in 1884 and 1890 and which have never been dignified with the name of panics. Those who believe in the mysterious theory of cycles must take notice of the fact that from 1857 to 1873 is sixteen years—while from 1873 to 1893 is twenty years, indicating what would be expected, a lengthening and not a shortening of the periods; counted in this way, the real crisis is not due. But whether this is so or not, the situation is sufficiently serious to call for the closest consideration. It proceeds apparently from impulses in trade and commerce of annual recurrence, which only need some special exciting cause to make them full of the gravest possibilities.

If the trouble is due to some weakness in our banking establishment—if it is something that legislation can remedy—then surely the needed legislation can be obtained. But until those credited as experts in finance can agree among themselves upon some plain and definite corrective procedure, instead of advancing all kinds of revolutionary schemes—using the situation as a club to advance them—it should not be a matter of surprise that public sentiment cannot be roused in favor of the so-called reforms, and legislators will be slow to adopt any of the schemes proposed.

Causes of Disturbance

The present disturbance has originated in New York. This is no reflection upon New York. That city is the heart of our financial system. We must look to it for all that is good in it, and it would be singular if anything bad should not also be evolved and developed there.

We must go back at least as far as April, 1903, when the great stock panic occurred, to discover the determining cause of the present situation. The extent of the drop in prices at that time and immediately following is indicated in the quotations of three first-class railroad stocks, which are selected as ones that would be the least affected by any depression:

	1902.	April, 1903.	Subsequently in 1903.
New York Central	168⅞	128½	112⅝
Pennsylvania	170	132½	110½
Chicago and Northwestern	271	174	153

The average loss indicated by the above figures which must be less than the average of all the stocks dealt in, if applied to the aggregate of all stock listed, would reach a sum that would dazzle the mind. It was a real shrinkage in apparent wealth, although the fall occurred without regard to net earnings and dividends which underwent no decrease. During the following years there was more or less recovery, but nevertheless the New York money market was seriously affected by the great capital loss shown in the depreciation of stocks and has been in a sensitive condition ever since. The same stocks have now fallen as low as 91½, 103½ and 126 respectively.

The reasons advanced for the tremendous fall in stocks and bonds have been various. Many influences may of course have had their bearings, but there is one fact which is undeniable, and is sufficient of itself to account for it. This has relation to the capital supply.

The productive resources of this country have been so enormous that capital sufficient to carry through almost any enterprise or undertaking, no matter how many millions or even hundreds of millions were involved, seemed at hand for the asking. It is a matter of wonder and bewilderment to the ordinary thinker where all the capital has come from to swing the enormous undertakings, which have been planned and carried through to successful termination during the last decade.

Notwithstanding these vast expenditures of the past, still vaster ones are planned for the future. A French financial writer has recently called attention to these tremendous proposed outlays of capital. He estimates the annual requirements of the United

States alone as $2,500,000,000.00, while our national income he says does not amount to one-third of that sum. He also shows that these extraordinary demands to be made upon capital are not confined to the United States, but extend in growing volume all over the world. Within the past decade the losses or wastes of capital have also been enormous. In this country we have had the Spanish War and San Francisco fire, while Europe has had to finance the Boer and Russo-Japanese Wars—the latter estimated alone at three billions of dollars.

The question of capital is, therefore, of world-wide application. There must be a limit to the available supply, but the strain upon the supply can only be developed in the course of events and cannot be easily anticipated. It will of course be shown in the rise of the interest rate. When new securities are placed upon the market upon more advantageous terms for the lenders than previous offerings, the price of the latter will naturally fall, and continued drains upon the capital supply must have the same effect in raising the interest rate that the ordinary law of supply and demand under similar conditions has upon the price of commodities. There is quite a difference in the value of a long-time security figured upon, say, a 3½ per cent basis and at 5 per cent or more. It is therefore quite clear that the depreciation in stocks and bonds caused enormous losses to their holders, and the effects of such losses would also be evidenced in the money dealings. The direct effect it had upon the banking business in New York is shown in the loss in bank deposits. The statements of the national banks for August 22d this year, compared with same period in 1906, showed a loss for the New York City national banks, in individual deposits alone, of $126,000,000.00, while the banks in the country outside of New York had gained $245,000,000.00.

The Panic

The exposures of the methods pursued in the Heintze and Morse banks, the troubles of the Mercantile and connected national banks, and runs on the trust companies, culminating in the closing of the Knickerbocker Trust Company, were sufficient to cause the excitement which followed and rendered imperative the suspension of currency payments by the New York banks. But this action undoubtedly led to withdrawal of capital from active use in another manner to a far greater extent than was indicated by the bank runs. The suspension in New York, followed by similar action in all of the reserve centers, was a severe shock to bankers everywhere. The dread specter of bank runs possessed their minds, and a craze to accumulate currency became a feature with nearly every bank in the country. This action on the part of the country banks was entirely natural and cannot be properly criticized. It is the almost inevitable result of an erroneous banking system. When New York is afflicted with a greatly depleted capital supply and currency is demanded to satisfy depositors, relief in time will be obtained from London and other parts of the world and from the United States Treasury, if it has any funds that can be deposited. But the interior banks are in an entirely different position. Having nothing to expect in the way of aid if needed from New York or other clearing-house centers, they must rely solely upon themselves. Self-preservation is the first law of nature, and they must accumulate all the currency possible in the expectation of a contingency which may never materialize, but the fear of which is as real in its effects as if it were an actuality.

The reserves not only of the country banks, but of all banks, with few exceptions, everywhere, will be shown by the reports of December 3d to be increased anywhere from 25 per cent to 50 per cent over what they were on August 22d, and they were excessive at that date. A contraction of active capital to this extent within so limited a time must be of ominous portent to the business of the country.

Temporary Cure

An emergency circulation of the character of that recommended by President Roosevelt would without doubt be effective as a temporary measure. The problem involved is a simple one. In some manner the capital withdrawn by frightened banks and bank depositors should be returned to circulation. The difficulty is that it will come too late to serve the present disturbance. It will take too long a time to enact the law and prepare the notes to be circulated. The lesson, however, ought not to be lost even if the measure should not become effective until a like disturbance occurs in the future. It can plainly be seen that if an emergency circulation had been at hand for immediate use, the present crisis would have been controlled at its inception, to the great gain of the country at large, and at no expense or risk to the public. On the contrary the public revenue would have been increased from the tax collected.

There should not be any disagreement as to the particular method to be adopted. The object of the emergency issue is to relieve the business situation, and it is especially intended for those banks carrying the loans of manufacturers and dealers, so that these may not suffer too severely from the sudden contraction of loanable funds.

If it is based solely upon approved municipal or corporation securities, it will be of special benefit to the owners of such securities, and of only indirect benefit to the interests to be served. Clearing-house loan certificates, secured by a pledge of actual commercial securities guaranteed by strong banks, would seem to be the most acceptable security for the purpose. The aid would then be given exactly where it is needed, and the certainty of the retirement of the notes within a reasonable time would also be secured. Emergency circulation, however, is only an expedient to relieve a condition which ought to be of almost impossible occurrence.

Asset Currency

The peculiar weakness of our banking system has long been recognized and commented upon, but the plans suggested for its reform have almost uniformly favored the issue of uncovered bank notes, generally called "asset currency." The weakness referred to has been almost annually demonstrated—first a period of redundancy then one of stringency, frequently accompanied by panicky conditions. These varying circumstances are explained by many as due to defects in our currency system. It is asserted that our money is not elastic as it should be; that it does not expand and contract with the demands of trade, and that in these respects our currency is different from that used by other great commercial countries, and hence the difference between the operations of their money market and ours. To cure these defects, it is insisted that authority should be given the national banks to utilize their credit, or, as has been said, to "coin their credits," by the issue of a certain amount of bank notes without the security of government bonds, or, in fact, without any pledged security. Judged by the amount of brains exercised, and energy, as well as money, expended during the past ten years in the furtherance of these views, it would seem that some decided, favorable impression would have been made upon the public mind. Doubtless many views have been molded by what appears to be the unanimous conclusion of financiers and money experts who have given the subject special consideration. The American people, however, will go slow in accepting these conclusions. The money question is not the peculiar cult of a class, but, thanks to the education of the political campaigns in recent years, it is one open to all classes, and especially business men, who will instinctively refuse support to measures which involve change—and perhaps radical change—in the foundation of all business enterprises.

The arguments offered in favor of the scheme are also not sound or convincing, and some misconceptions conveyed concerning other currency systems can be easily corrected.

The quantity and character of our money supply on November 1, 1907, were as follows:

Gold coin and bullion	$1,561,714,719
Silver dollars	568,240,982
Subsidiary silver	136,201,145
U. S. notes	346,681,016
National bank notes	656,218,196
	$3,260,065,058

Population 86,066,000, per capita	$37.72
Compared with other countries:	
Great Britain, per capita	18.02
France, per capita	39.94
Germany, per capita	22.13

The total volume of money in Great Britain is $787,600,000, which is only about one-fourth of ours, and yet with this supply she manages not only her own finances, but those of a great part of the world.

The per capita comparison is still more startling for that portion of our circulation dependent upon gold for its parity therewith:

U. S. notes and national bank notes	$1,002,899,212
Deduct gold reserve	150,000,000
Total uncovered	$852,899,212

United States, per capita	$9.84
Great Britain, per capita	2.67
France, per capita	3.02
Germany, per capita	3.53

If we add to our uncovered currency, silver certificates $464,-349,568, which are also dependent upon gold, the per capita is increased to $15.20.

These comparisons show that we have the largest volume of money of any country in the world, and that, with the exception of France, which we nearly equal, we have the largest per capita. Our uncovered paper has a per capita more than three times that of any other country, not excepting France. This apparent over-abundance of money is admitted by those who urge the asset currency scheme. One of the members of the American Bankers' Association has this to say:

"Commerce really suffers more in the long run from periods of over-abundance of our present circulation than from those of scarcity. The origin of each recurring period of tight money can be traced to preceding periods of easy money. When the maximum demand for currency occurs, so much of it is required that the banks with difficulty maintain their legal reserves, but when the demand is at its minimum, the currency accumulates in their vaults and they resort to forced loans, inflated credits, cheap rates and other artificial methods to keep it employed and earning something."

If it is as this writer states, the excessive quantity of our existing currency which causes the over-abundance of loanable funds at certain periods, in what manner can that situation be improved by an addition to that quantity?

Will not the additional circulation tend to intensify the evils complained of?

The over-abundance, however, referred to is not necessarily "currency," although this writer conveys that idea. In actual effect it is an increase in cash resources by means of increased deposits or by the payment of loans. If during this period, in order to keep the excess funds "employed and earning something," the banks make "forced loans" and extend "inflated credits," it can easily be seen that when the "tight money" period comes they are in no condition to make the legitimate loans which the business interests of the community demand. To authorize the issue by the banks of a credit currency under such conditions would be an economic error and one that in the end would cause greater disasters than those its issue was intended to prevent.

That it is not merely an excess or redundancy of currency which causes the shifting periods can easily be seen by examining statistics. The actual volume of cash held by the New York banks does not vary greatly in the course of a year, and yet during the same time large excesses or deficits in reserves will be shown in the weekly reports. Comparison between the last summer statement and the first fall one in the reports to the Comptroller for a number of years past will show that the volume of cash held has oftener been larger in the fall than in the summer, and disproves the idea that it is solely a currency drain which marks the activity of that period.

It is asserted that the proposed notes would not be a permanent addition to the circulation—that having performed the service for which they are intended, by some means not clearly shown, they will be returned to the issuing banks and canceled. In the American Bankers' Plan a tax of 2½ per cent per annum is imposed upon the first issue—this however would not be sufficient to cause the return of the notes in even the easiest money period. It is possible that some eastern banks would then retire them, but the proposed issue is for banks all over the country and in sections where such a low interest rate is unknown.

Hon. Charles N. Fowler, the persistent advocate in Congress of asset currency, in his plan wants no tax. In a recent speech he says:

"Our bank notes must spring into existence precisely as checks and drafts do, through business transactions. Our bank notes should be related to and based upon the consumable commodities of the country, going out with production and coming in with consumption." These are brave words but highly figurative. It will be easy enough to spring them into existence with or without production, but what is there to bring them back with consumption?

Where hangs the string to this kite that will anchor it safely and bring it to land when desirable? The American people of this generation are not accustomed to any but the best kind of paper money. It has passed readily from hand to hand with unquestioned credit, and has continued to circulate until worn out. The only thing besides a tax that will force redemption is doubt as to the continued goodness of the notes.

If the money Mr. Fowler has in his mind is similar to "checks and drafts"—such money, for instance, as the banks throughout the country have recently been forced to put out, much to their own disgust as well as that of their customers, then we may be able to understand what he means. It will come back, all right, provided it ever gets out, but the country wants no such money as a constant diet.

The assertions made concerning the use of similar currency in other countries have very slight foundation to support them. For instance, Mr. Fowler in this recent speech declared that "no civilized country now has a bond-secured currency such as we have, and no country ever did have such a currency." This statement is made in face of the fact that the Bank of England's "fixed" issues are against government securities, and aside from these issues, that great bank does not put out a single pound that is not against a similar amount of gold coin or bullion.

Much also is said concerning the elasticity of the Scotch bank-note system. In a recent paper by Mr. George M. Coffin, this elasticity is sought to be shown by figures. He states very correctly that no paper currency "uncovered by coin" can be issued by the banks of Great Britain, except their "fixed issues," determined by Act of Parliament and limited to the circulation existing at the time of the English Bank Act of 1844, extended to Scotland in 1845. These "fixed issues" of the Scotch banks he gives as £2,676,350 ($13,000,000). The elasticity of British currency he says "is confined within the limits of the 'fixed' issues of uncovered currency."

He then gives a table of circulation for a number of months in 1905-06, the maximum during the period for the Scotch banks being £8,091,692 and the minimum £6,906,103, the difference being the extent of the elasticity claimed. As the fixed issues only aggregate £2,676,350, the figures in the table are all at least three times the sum of the fixed issues, and if they show anything it is that the entire fixed issues are constantly out, with neither accession nor diminution to their quantity, and therefore are about as inflexible as any money could be. The remainder of the note issues are covered by coin. In this country we would not be willing to accept, as an example to be followed, the currency system of Scotland, in which the note circulation can only be increased as the gold reserve is increased, and must be decreased as the gold reserve goes down.

Viewed from every standpoint, the proposed issue of credit bank notes should be deprecated. Their use is not sustained by the practice of the most enlightened financial power, nor is it demanded to correct any defect in quality or lack in quantity of our existing currency. That currency possesses in a high degree the elasticity which gold possesses in a larger field, moving as the representative of capital from one part of the country to the other, just where it may be most needed. Its free movement however is trammeled by law, whereas legislation has always failed to hinder the international movement of gold. This leads to the consideration of the real weakness in our banking system.

Inelastic Bank Reserves

The weakness lies in the immobility of our bank reserves. In Great Britain no reserve is required by law to protect bank depositors, but with us both under federal and state statutes a fixed reserve of a stated ratio upon deposits is demanded. Dealing as they must with such a multitude of banks our law-makers have adopted this expedient as the best protection at hand.

Mr. W. R. Lawson, an English financial writer, in an article published some years ago in the "London Bankers' Magazine" (republished in the "New York Bankers' Magazine," February, 1903), comments upon this feature of our banking system as follows:

"We wish to point out that a very large portion of United States currency is a legislative fund only, and but for certain laws might be dispensed with. The *raison d'etre* of such law-made money is to guarantee bank deposits, in other words to insure safe banking. Thus a large part of the currency exists not for purely monetary but for banking reasons. It is the workman and not the tools that are at fault. As a purely monetary proposition there is no proof whatever that the United States has an insufficient currency. The official statistics indicate that even eighty millions of people have no real use for $2.336,000,000 of circulating medium. Moreover 'elastic' banking is required then, rather than 'elastic' currency." What this intelligent and observing foreigner says concerning our money system will be admitted by every thoughtful investigator.

It is this struggle between banks to maintain reserves that almost annually brings the country to the verge of a panic.

The following figures will show the amount of cash reserve required by law as shown in the national bank reports for August 22, 1907, and the cash actually held at that date:

	Required.	Held.
Central reserve banks	$301,371,801	$321,361,557
Other reserve banks	177,929,155	205,397,797
Country banks	157,629,879	238,141,834
	$636,930,835	$764,901,188

In the above statement the central reserve banks held 6.6 per cent of legal reserve more than required, the other reserve banks 15.4 per cent, and the country banks 51.3 per cent—all of which is very suggestive considering what occurred only a few weeks afterwards. This is the showing for 6,544 banks out of a total of nearly 18,000 of all kinds. We are not prepared to agree with Mr. Lawson as to the uselessness of these reserves. It is true that an equal amount of protection would be given if a large portion of them was composed of good interest-bearing securities instead of money. The money reserve however serves a double purpose—it is both security and money, and therefore the very best kind of reserve under the conditions imposed by our multitudinous banking system. No one would recommend the lessening of this required reserve of cash on hand; on the contrary there is a tendency to increase it.

The reform plainly needed is some plan by which these reserves may be utilized without impairing or endangering their value as security for deposits.

In this connection a government bank is suggested and perhaps is received with more favor than any other scheme proposed. There is much to commend in the idea, provided its scope could be confined to transactions between banks. This limitation would probably render the scheme impracticable, and an organization of the kind for the prosecution of a general banking business would be as little favored by bankers as it would be by the public generally.

So many plans have been offered as certain cures for our financial ills that the writer hesitates to add to their number. But if his diagnosis of the trouble is correct, if it is admitted that a large volume of currency is constantly hoarded as bank reserves, which, in times needed, should be utilized as working capital to aid the legitimate business enterprises of the country, then it would seem that the problem is a simple one.

In the opinion of the writer the difficulty may be largely if not entirely solved in an effective manner along the lines of what we already have in practice.

Measures Suggested

First.—The cash actually required on hand in banks should be simplified and made to embrace the various kinds of our money held under the general term "cash." A detailed statement is now required in reports showing the different kinds of money on hand, and all of it is counted as reserve except national bank notes, nickles and pennies. There is no just ground for this exclusion of national bank notes. Our money is all of equal quality. The bond-secured notes have more security back of them than the legal-tender notes. They are public obligations and not ordinary bank notes, for the government guarantees their payment, and is secured in so doing dollar for dollar by its own bonds, and in addition thereto a reserve of legal-tender money deposited with the Treasurer of the United States. These notes have performed a valuable public service in the support of the government credit. By their means the financial credit of the United States has been made higher than that of any other nation in the world, its long-time 2 per cent bonds selling in the market at from $1.05 to $1.10, while 2½ per cent British consols bring little more than eighty cents.

The public recognizes no distinction between legal-tender money and other kinds which are not legal tender, such as gold and silver certificates, as well as national bank notes. All have equal credit and pass readily from hand to hand.

In fact dense ignorance prevails among all classes of people as to what is legal tender and what is not. An amusing illustration of this fact occurred in an editorial a few weeks ago in one of the most popular New York banking journals. Under the heading "Legal Tender" the article said: "Indifference and ignorance on the subject of legal tender is widespread and colossal. Among the few wise things along currency lines which have been done in this country is the adoption of the English system of composite legal tender. Gold is our only legal tender in unlimited amounts. Greenbacks and silver are legal tender up to a certain fixed sum, beyond which the acceptance of them cannot be compelled."

Of course the editor had not perused recently what is printed on the back of every greenback and had forgotten all about the "dollar of our daddies." It is not necessary that the bank notes should be made legal tender, but in view of the fact that fixed reserves are intended mainly for the protection of depositors, will anyone maintain that this protection is weakened if national bank notes are so counted?

Second.—The banks should be encouraged to keep a portion of the fixed cash reserve with the Treasurer of the United States. This would be accomplished if the balances maintained with the Treasurer were allowed to be counted as cash on hand. In Great Britain the banks in making reports include in their cash on hand money on deposit in the Bank of England.

Third.—The existing practice of the Secretary of the Treasury in lending public funds to the banks upon approved securities should be further extended, so far at least as this bank fund is concerned. Instead, however, of depositing with specially selected banks, it should be arranged in the form of direct advances to all banks supplying satisfactory securities. In order to effect this, open accounts should be maintained with all the banks, and they should be permitted at all times to draw on the Treasurer, first, to the extent of their credit balances, and, second, to the extent of the treasury value of the approved securities held by him.

In order to more formally pass on these securities a board of treasury officials may be created, composed of say the Secretary of Treasury, Secretary of Commerce, and Comptroller of Currency. To this board should be given the power to fix, from time to time, the interest rate which should be charged on all daily debit accounts, the interest collected in this way to be distributed to the credit accounts somewhat in the same manner as interest distribution is now made in clearing-house associations upon loan certificates. The expenses should also be provided for by a just and equitable tax upon the banks.

This plan would of course require more clerical force than the department now accords to this business, but as both deposits and checks would be in round sums, much of the complication of a regular banking business would be avoided.

As the interest rate advanced, the greater would be the inducement to increase deposits with the Treasurer, and this advance and fall of the interest rate would supply in a steady and comprehensive manner a financial barometer of monetary conditions, which is now absolutely lacking. It now requires but comparatively a small drain upon the New York bank reserves to cause all kinds of perturbations in the money market.

Estimating that one-half of the present fixed cash reserves of the national banks should be deposited with the Treasurer, this would alone provide a fund of over $300,000,000. No interference would necessarily occur with that portion of the reserves which may be maintained with national bank reserve agents. With this plan in successful operation, it may easily be conceived that the instability now afflicting our money system would in a large measure be corrected, that the annually recurring periods indicating incipient panics would be prevented, and the danger avoided of absolutely uncalled for financial revulsions, with their attending commercial and industrial losses and suffering.

THE NORTHWEST IN THE RECENT FINANCIAL CRISIS

By A. L. Mills,
President First National Bank, Portland, Ore.

The story of the panic of 1907 varies little from that of former panics. If, however, we profit by its lessons and evolve from its troubles proper financial legislation that in future will protect our banks and commercial interests against danger and loss, the panic of 1907 will not have been without compensation. As was the case in 1857, this country in 1907 was seemingly most prosperous. There was much railroad construction, involving the sinking of a great amount of capital far beyond what was immediately productive; speculation was rife, accompanied by much extravagance in both public and private life; graft and dishonest business methods were exposed; money was in increasing demand at steadily rising rates; there were many strikes and labor was dictatorial in its demands; real estate was active and there was a reckless expansion of all credit.

These conditions are the familiar forerunners of every panic; but our people paid no heed to the warnings uttered by students of finance, spoke jestingly of "a prosperity pinch," and went on in search of easy wealth until the failure of the Knickerbocker Trust Company in New York plunged the country into a senseless panic. As in 1857, the failure of the Ohio Life and Trust Company of Cincinnati; as in 1873, the failure of Jay Cooke & Co.; as in 1893, the failure of the Philadelphia and Reading Railroad Company and the National Cordage Company, so in 1907, the failure of the Knickerbocker Trust Company marked the end for some years to follow of our country's reckless financial operations.

The bankers of the Pacific Northwest were not altogether unprepared for financial trouble in the East; they had read the handwriting on the wall and were warned of approaching danger. And yet, when the storm broke, they were not prepared, for they found themselves stripped of their Eastern balances and forced to depend upon the actual coin within their vaults. Confidence, begat by the knowledge that the Northwest was out of financial bondage to the East, that the whole world was calling for its lumber, that an immense wheat crop had just been successfully harvested, which England was eager to buy at highly remunerative prices, was destroyed in a second, and for a moment the people of the Northwest could see nothing before them but disaster.

Prior to October 28th the Pacific Northwest had watched with interest, but with no concern, "the rich man's panic in Wall Street," had noted the struggle of the Copper Kings, the failure of the Knickerbocker Trust Company and the great run on the Trust Company of America. The troubles in New York were interesting, but did not closely concern the Northwest. But on October 28th all was changed. Telegrams poured into Portland from bank correspondents all over the country, "Cannot ship you coin or currency against your balance. Make your drafts payable only through the clearing house. Advise you organize for your own protection." The financial machinery of the United States had broken down and in a flash business was paralyzed.

The Portland bankers then carried in their vaults but the usual amount of coin necessary for the ordinary transaction of business. When the shock came, October 28th, they had barely begun to shift their balances westward, an action always necessary at crop-moving time. Face to face with the problem of moving thirty millions of bushels of wheat, threatened by frightened and hysterical depositors, with no funds other than those then in their vaults, they sought aid from the governor of the state. His excellency at once grasped the situation, and on October 29th declared a legal holiday that continued, with the exception of three days, from October 29th until December 16th. On the latter date Portland returned to normal conditions, the first of all the larger cities to remove all restrictions on payments. The return was accomplished without trouble or excitement; the people had had time to cool down and the good sense and loyalty of our citizens did the rest. But though there was a legal holiday from October 29th to December 16th, the banks of the state kept open. The holiday gave protection to the banks against hysterical depositors, prevented attachments being levied on the state banks and made possible the restriction of payments.

The moment a holiday was secured the Portland banks, on October 29th, authorized the issuance of clearing-house certificates for use between the banks in settling balances. One million dollars in certificates were issued, but by December 16th six hundred and thirty thousand dollars worth had been retired. The most difficult problem to face was to finance and move the wheat crop. There was not enough coin in the banks and some sort of a circulating medium to serve as an emergency currency had to be devised and one that the people would take.

Printing-presses were set to work manufacturing what was known popularly as "Wheat Money." The banks agreed to take it on deposit or in payment of debts. This was necessary to give the scrip negotiability. This emergency currency was in denominations of $1.00, $2.00, $5.00, $10.00, and $20.00, and in all over a million dollars were placed in circulation. In the main it was secured by wheat in warehouses, covered by insurance, and for every dollar of scrip so issued there was in the warehouses $1.50 of wheat. Some small amount was issued also against approved bonds in the same ratio. The currency was readily taken in all the stores and by the railroads, and yet it was liked by no one. Better secured even than national bank notes, since behind national bank notes ultimately is only the tax-raising power of the United States, nevertheless Portland's wheat money, lacking the power of legal tender, drifted quickly back into the banks. Such in brief is the story of the panic from the view point of the Pacific Northwest. What of its lessons?

To him who was in the control and management of a national bank in Oregon in the fall of 1907 two dangerous faults in our existing financial laws were strikingly apparent, to-wit, the utter weakness of the fictitious system of bank reserves, and the total inadequacy of our present financial system to withstand the onslaught of unreasoning panic.

Fictitious Reserves

In an address delivered before the Washington State Bankers' Association at Whatcom, July 23, 1903, the writer, in speaking of bank reserves, said as follows:

"Under the present National Bank Act, in other than reserve cities, a bank is permitted to loan all but 15 per cent of its liabilities; of this 15 per cent three fifths may be deposited in a reserve city; and the banks of a reserve city are permitted to deposit one-half of their 25 per cent reserve in New York, Chicago or St. Louis, where the national banks are required to keep but 25 per cent in coin. Has it ever occurred to you how small an amount of coin is thus behind the deposits of the country? How dependent all the banks of the country are upon the resources of the great banks of New York, Chicago and St. Louis? The restrictions of the National Bank Act may, in the opinion of the framers of that law, be sufficient protection to the depositors, but does anyone here think it reasonably safe banking to have but a little over 6 per cent in cash behind his deposits? And yet a compliance with the National Bank Act requires but that much coin. For instance, a national bank in Whatcom has $400,000 deposits; of its $60,000 reserve $36,000 may be kept in Portland; against the $36,000 Portland must keep a reserve of $9,000, of which $4,500 may be in New York, and New York is required to keep but $1,125 of this on hand. To meet the $400,000 in Whatcom the requirements of the National Bank Act are fulfilled with only $29,625 cash, or a trifle over 7 per cent. This may be sufficient protection to the public, but when Uncle Sam deposits his money, he requires as security dollar for dollar in his own obligations. When we note how closely the banks of the country are knit together, how dependent they are upon one another, is it a matter of wonder that a panic in Wall Street is felt throughout the length and breadth of the land? Is it wise to be so dependent? Should our banks not be more independent? And to do so should they not carry more of their reserve in their vaults?"

But these remarks only referred to national banks and their reserves. When account is taken of the scanty reserves maintained by state banks, private banks, savings banks and trust companies, the amount of actual reserve behind the deposit liability of the country dwindles to such small figures that one staggers with amazement at the vast amount of credit that rests upon a single dollar. With this thought in mind need one be surprised that a run on the Trust Company of America caused a currency famine in New York, the effects of which were felt throughout the length and breadth of the land?

In framing the National Bank Act (of which most state bank acts are but loosely-drawn imitations with more lax restrictions) the theory seems to have obtained of concentrating the actual money of the country in the large cities. A reserve that is on deposit with another bank is not a cash reserve. The only cash reserve is coin in the vault. It is a good asset of the bank, but by no means cash. The present system of reserve on reserve, reserve on reserve, makes it more difficult to find the true reserve than it is to find the elusive pea in a shell game.

The complete breakdown of the present system of reserve was illustrated in the recent panic. Beyond permission to draw against their balances in "Clearing House Funds" the legal reserves maintained in the East by the banks of the Pacific Northwest were almost valueless as a source from which to draw funds to meet the demands of depositors. The banks were forced to depend upon the actual coin in their vaults and to manufacture such other circulating medium as the suffering public would endure. Does not this experience prove that our system of reserves is a fiction, false in theory and worthless in practice?

If banks were required to maintain in their own vaults the full legal reserve there might be contraction of credit for a time, but the financial institutions of the country would be on a sounder basis. However, there is little hope for change, especially as long as the payment of interest on daily balances exists to arouse the avarice and befog the judgment of the average banker.

The Weakness of our Financial System

That a currency famine in New York should endanger every financial institution in the Union, and in a year of bountiful crops and great prosperity cause a widespread and senseless panic is sufficient evidence of the extreme weakness of our system of finance to cause every Doubting Thomas to favor currency reform at once. Writing forty years ago Robert Baxter said, "provision should be made for such a contingency as a panic, so that, when hoarding interrupts the necessary flow of currency, a new stream may, under proper safeguard, be created and the course of business sustained." The necessity for such a provision, for the issuance of some kind of an emergency currency, had ample illustration in the fall of 1907. Every great city and many smaller ones in October and November issued clearing-house certificates for use in settlements between banks, and in addition, in order to prevent the utter stagnation of business, issued in unlimited quantities clearing-house scrip of small denominations.

Can there be a better example of what reform is needed in our financial system than the fact that throughout the length and breadth of our land local emergency currency was issued to discharge the duties of a national currency that had largely disappeared from circulation? As a supplement to the national currency this suddenly-developed circulating medium served its purpose well. Without concerted action on the part of the banks, in a night, this local emergency currency sprang into existence to perform the daily exchanges of business. The emergency that called into existence having passed, it quickly gave way to the better currency and was retired.

How much better a true emergency currency with legal tender qualities would have been, any one who handled the hundred different kinds of clearing-house scrip can bear witness. Had there been provision for an emergency currency as in France and Germany, and in a measure in England, the financial disturbance in New York would not have involved the entire country. The frightened depositors of that city would have been met with an ample supply of funds and New York's financial institutions would have paid the price, for no plan for an emergency currency should ever be adopted that does not include a steadily rising tax to be levied upon the banks taking out such currency; and the tax should be no light burden, such as three or four or even five per cent, lest in avoiding panic we are ruined by expansion.

Sumner says, "Any device which has elasticity for its object will have expansion for its effect." And expansion spells ruin for our financial system. We therefore must beware of the expansionists with their asset currency nostrums and keep ever before us that the standard of value is gold and that gold can carry but so much burden. Overload gold with too great an amount of paper promises to pay and the precious metal will leave our shores and we shall be dependent upon fiat money. Better a panic every year than gold at a premium.

How should our laws be amended to permit the issue of an emergency currency that shall be sound, be quickly issued when required, and rapidly retired when the emergency is passed? The best plan proposed is a central bank of issue, approaching as nearly as possible to the Imperial Bank of Germany. But it is to be feared that the intelligence of the average congressman is not of high enough order to rise above fear of local prejudice and to permit him to vote for the good of the whole nation, if it does not suit his local banker. Should the unexpected happen, however, and Congress rise to the needs of the country and pass a bill for the establishment of a central bank several points must be covered:—

1. The government must have a voice, and perhaps a controlling one, in its management.

2. No one section of the country should be permitted to dominate in the directorate; all parts of the country should be represented.

3. The bank should be a bank of issue and not of deposit. Its profits should be derived from lending its circulation and its debtors should be the banks of the country.

4. To it alone should be given the power to issue an emergency currency, and care should be exercised in the amount of gold reserve.

5. The national bank currency and greenbacks should be retired.

If the central bank cannot be established and we have to work with the tools we have on hand, which is more than likely since changes come slowly, then to the national banks should be given additional powers. They should be permitted to take out an emergency currency to the extent of 50 per cent of their capital on comparatively easy terms. This currency should be a legal tender and in all forms like the present notes. It could be protected by a small tax on all the national banks as well as by deposit of securities. Above all and before all it must be taxed on a rising rate such as will make sure its retirement when the emergency passes. Panics come quickly and do not last long, so that the emergency currency should be promptly issued and as promptly retired.

The panic of 1907 has passed into history; whether its lessons will have taught us aught of good or will bring about reform in our financial system remains to be seen.

NEGLECTED ASPECTS OF CURRENCY AND BANKING

By Frederick A. Cleveland, Ph. D.,
Author of "The Bank and the Treasury."

When in the early months of 1902, Mr. Shaw took the treasury portfolio, the country was passing through a period of marvelous financial activity. Four years of commercial and industrial consolidation, four years of trading in new corporate issues, "on margin," had absorbed hundreds of millions of banking capital in speculation. Moreover, this incumbering of current funds had taken place at a time when commercial and industrial expansion was multiplying its demands on our banks for credit accommodation. True, on May 9, 1901, an unexpected corner in Northern Pacific had brought speculation to a temporary standstill. But the quiet which followed had been utilized by the large banking interests to get together needed financial support with which to launch United States Steel and other new gigantic promotions. From two to three thousand millions of new issues had to be digested and assimilated by the investing public before our institutions of commercial credit could sufficiently relieve themselves from speculators' loans to meet the growing demands of trade.

After 1898 the financial situation was at all times pregnant with danger to business. So large was the proportion of new flotations carried on bank credit, that in the early months of 1902 conservative financiers became alarmed; serious question was raised as to what the outcome would be. The fear expressed was that the banking capital of the country was overloaded with credit obligations of a most dangerous sort. Within six years the national banks had increased their demand obligations to individual depositors more than $1,600,000,000, while during the same period their capital, both subscribed and earned, had increased only $135,000,000. That is to say, for every additional dollar put into the national banking business during this period, twelve dollars of credit in the form of new deposit accounts had been issued against it.

At the time that the national banks were thus extending their credit obligations similar expansion was taking place in the deposit obligations of state banks, private banks and trust companies. They had increased their demand credit over $2,000,000,000 while the new capital added to the business was only $235,000,000, making a total expansion in deposit accounts of $3,600,000,000 with a total increase in capital of $370,000,000. The amount of credit expansion in bank accounts alone—*i. e.*, expansion in the form of cash with which business is done—was equal to about two and one-half times the total money circulation of the country outside of the reporting banks, while the total increase in banking capital was only about one-seventh of the money stock of the nation.

To the end of aiding the banks to meet increasing money demands, Secretary Gage had used the customary methods of relief. He had refunded the bonded debt on a lower investment basis; he had made numerous purchases of bonds for retirement; he had made interest payments in advance; he had added to the relief thus given by loaning to the banks some eighty millions of dollars, in the form of revenue deposits. Such was the situation when Mr. Shaw came to the cabinet.

The Credit Climax of 1902

Within the next few months pressure on the banks was something extraordinary. The climax was reached in September and October. Then it was that Mr. Shaw broke away from all precedents and issued his famous order that savings-bank investments be received as security collateral to additional revenue deposits. This first order was soon followed by another which relieved the banks from the necessity of holding a 25 per cent reserve against the secured deposits of the government. The effect of these two orders was to increase loans of the government to the banks from $113,000,000 to $166,000,000—producing a temporary result in financial circles much the same as if $50,000,000 of new capital had suddenly been added to the banking business.

During 1903 the financial stress of 1902 was gradually reduced. By concerted action of banks, by the continued aid of the government, by the imposition of high interest rates on bank accommodations and by demands for added collateral to margins forcing liquidation, the over-encumbered capital of banks in financial centers was again somewhat relieved. These acts of conservatism were followed by months of wholesome trading during which time speculation played the smaller part.

The latter part of 1904 and the years 1905 and 1906 were another period of dangerous credit expansion. During 1904 clearing-house transactions of the United States amounted to $102,000,000,000.00. The clearings for 1905 were $140,000,000,000.00. In the year 1906 they reached $157,000,000,000.00. December, 1906, was a month of high tension at the financial center to relieve which call-money sales were advanced to 36 per cent; the average of call rates for the month was about 14 per cent; third-day money commanded from 9 per cent to 15 per cent. During a few days of the January following, as high as 50 per cent was paid for call money. This was followed by two months of comparative quiet. In March, 1907, however, speculative trading and holdings on margin had again reached such proportions, that in efforts to protect themselves, the banks were forced to call and in a single day the market price of securities dropped from five to twenty points. General prosperity and prompt relief from Washington alone saved our commercial and industrial institutions from distress similar to that recently experienced through the sudden contraction of bank credit.

It was during this period, of rapidly increasing business activity and rapidly expanding bank credit and in anticipation of a sudden need for increased support to bank-credit obligations, that Secretary Shaw rendered another signal service to the country. He saw the approaching storm and prepared for it by getting the treasury in condition to come to the rescue of the country when the banks would be unable to meet obligations for payment without wholesale reduction of credit accommodation. In the first place payment on the Panama Canal purchase was made by withdrawal of the deposits of the government, diminishing by this amount the demand loans of the treasury to the banks and the consequent inducement to banking extravagance. After making the Panama settlement—to provide for which a 20 per cent call had been made—the treasury deposits were about the same as when Mr. Shaw had been appointed to the cabinet three years before. Further than this the Secretary gave notice to the banks that a call would be made, first, for 25 per cent and later for 50 per cent of the balance of government deposits, and although these demands were not enforced to the letter, by November, 1906, the demand obligations of the banks to the government were reduced to $50,000,000. Thus it was that, by the time the banks in financial centers had again reached the danger point of credit expansion, Mr. Shaw was able to come to the support of the money market; and during the year 1906 and the early months of 1907, an added one hundred and twenty million of dollars in the form of additional deposits were loaned to the banks without embarrassing the treasury, enabling them to maintain their money reserves without seriously contracting business accommodations.

After the immediate need for collateral supports to the banks had passed, Secretary Cortelyou announced that he would follow the same general policy as had been pursued by his predecessor. But during the months from May to November the demand of the banks for money with which to maintain their reserves constantly increased. Protests were made against reducing the treasury balances that had been loaned to the banks to tide things over the stress which came earlier in the year.

Yielding to these importunities was a serious mistake. Instead of calling attention to the present capital weakness of the banks, the government permitted them to continue to use the large treasury balance without interest. The banks found that it was not necessary to increase their own capitalization; in fact, the government held out an inducement not to increase their capital, since the present stockholders were able to increase their income by the amount of the credit expansion supported by the treasury balance without being required to share the increased profit with new stockholders. Not only were the banks themselves weakened by continuing aid, but the government was placed in a position where it could not lend a strong helping hand in future emergencies.

The October and November Panic

When in October and November, 1907, panic days again were reached, the government at Washington could not respond with the liberality required. In May the $170,000,000 point had been reached. August 22 the amount had been reduced to $143,000,000. August 23 Secretary Cortelyou began increasing treasury deposits with banks. November 11 $70,000,000 had been added to the deposits, and during the month following practically the whole available surplus of the treasury had been loaned to the banks. But even this did not suffice to support the weight of obligations that had been permitted to accumulate on the crumbling foundations of the banking institutions of the country.

The alternative to the banks was to force a violent credit contraction. The essential weakness, a first cause of credit collapse, is found in the changed relations of credit outstanding to capital supporting it. In 1897 the proportion of national-bank capital to individual deposit obligations had been as 1 to 2.93; in 1906 their proportions reached 1 to 5.03. In 1897 the proportion of national capital surplus and undivided profits to individual deposit obligations was as 1 to 1.92; in 1906 this proportion reached 1 to 2.79; in 1897 the proportion of money reserves held by national banks to individual deposit obligations was as 1 to 5.35; in 1906, even counting all the money borrowed by the banks from the government and from state and private banks and trust companies, this proportion had reached 1 to 6.71.

The institutions chartered by the government to supply credit accommodations to the business public had been permitted to grow top heavy. Worse than this: Not only was it permitted that they issue a dangerous proportion of demand credit to capital and money supporting it, but the character of commercial assets purchased by the banks by means of this credit was even more dangerous—a large part of the demand credit having been issued in exchange for paper secured by collateral which had been purchased "on margin," the market price of which was gradually depreciating. As fast as speculation prices depreciated the demands of bankers for additional collaterals became more tense. The net result was to force sales and to still further depress the market. When speculators reached their limit they made special pleas to the banks for "time," till the market might change.

The Capital Weakness of the Banking System Revealed by Commercial Demands from the Interior

The increasing demands from the commercial and industrial constituency of the vast interior forced the issue. When the country banks began to call the loans which they had made to the reserve banks, when the reserve banks, in turn, were forced to call their loans to the great central reserve banks that had used these loans for money reserves with which to support the credit accommodations to speculators, then it was that the mutual props in the form of "legal reserves" began to give way and the whole business constituency which depended on bank credit for "cash" was thrown into a condition of distress. The resulting condition is what Mr. Ridgely refers to as the loss of confidence of banks in each other. To save themselves the central reserve city bank had to issue clearing-house certificates, which is another name for the suspension of specie payment. This protective measure of the central reserve banks forced the banks the country over to adopt the same expedient. Mutual obligations within each community were settled by means of clearing-house paper.

Relief finally came in the only way possible—through added capitalization. This capitalization, however, was only temporarily supplied. It was furnished by a syndicate of which the house of Morgan & Co. was the head. The government also added all of its remaining surplus available. A broader basis for credit liquidation was established through the importation of approximately $65,000,000 in gold. a large part of which was procured by means of this new temporary capitalization furnished by the syndicate. But the reduction of the demand credit used as "cash" in commerce and industry was far greater than any possibility either of importation or money issue could supply—a contraction of the credit circulating medium which resulted in reduction in prices, temporary receiverships and wholesale stagnation of business. Never has there been a more tragic financial situation. Only the general prosperity of the commercial and industrial world saved us from the worst of business calamities.

By the end of the year 1907 the credit stress was in a measure abated. This was in part due to importation and in part due to the largely decreased business demands, resulting from receiverships and liquidations, forced on by the sudden withdrawal of hundreds of millions of dollars of banking accommodations which had been previously extended to legitimate enterprises. The remedy applied was drastic, wrecking the fortunes of thousands of persons engaged in useful employment. But the fundamental weakness of the system still remains to be dealt with. If collapse may come at a future time less prosperous than the present, failing credit may work still greater havoc.

Dangers in the Present Readjustment

The present readjustment is essentially a dangerous one. Not only is the added capital a temporary support, but in its method of application dangerous. Practically the whole treasury surplus is tied up in the settlement. January 1, 1908, the banks were owing to the United States Treasury, either in the form of direct loans or as deposits of disbursing officers, about $256,000,000.00. A part of this the government needs at once to meet its current expenses. By a continued policy of loaning the treasury surplus to the banks without interest, by permitting the banks to retain a large part of the loan as money reserves for the support of obligations to depositors during time of credit expansion, by permitting the banks to find relief in added loans from the treasury and in a temporary syndicate a plan of reorganization is accepted which does not take care of the large floating debt and which does not provide adequate working capital. Another element of weakness is found in the fact that while the syndicate loans have a high rate of interest, the loans of the government are without interest. The syndicate loans, therefore, will be paid as rapidly as possible while the government will be further importuned not to reduce its balances.

In case it may happen that the country banks may again loan their reserves to the reserve banks, and the reserve banks may loan their reserves to the central reserve banks in sufficient amount, then the government may again be able gradually to call its loans. But with the first considerable pressure brought to bear on the system, the experiences of last May and of last November will be repeated. We may expect to suffer from alternating expansion and contraction, the one dangerous as a cause, the other dangerous as an effect, so long as the banks rely on borrowed money for their reserves. We may not expect the government to be in a position to protect the country against the unbalancing effects of sudden contractions so long as it places itself in the attitude of permitting the banks permanently to use the government surplus in lieu of adequate capitalization.

The government is now in a position such that one of three courses is open to it: (1) It may demand payment of loans to the banks with the possibility of disrupting the whole fabric of private credit based on the present reserve, (2) it may permit the banks to use its fund without interest and borrow money at interest with which to meet its own current expenses, (3) it may, by charges of high rates of interest to the banks for loans in the form of deposit and bank notes issued on collaterals deposited, force the banks to add sufficient *permanent* capital to their business to enable them to meet all their present *emergency* capital obligations and at the same time insure the safety and stability of their own credit accounts. In this situation President Roosevelt has appealed to Congress urging that the last of the three courses be taken. His specific recommendation, however, is confined to note issues. It remains for someone in authority to seriously propose a measure which will effectively apply the same regulative principle to the loans of the government to the banks in the form of "deposits."

Within the first six weeks of the present Congress several bills were introduced which provide for an interest charge on these loans. In the House, Mr. Fowler (H. R. 12,677) and Mr. Keifer (H. R. 208) propose that banks be required to pay two per cent on government deposits. That such a measure would prove ineffective to cause banks to return government "deposits" after an emergency were past is amply proved by some forty years of experience with reserve loans. At such a rate banks have never been known to return reserve deposits until "called." In the Senate two bills have been introduced which aim to make "deposits" emergency loans, but whose defects are apparent. Senator Culberson (S. 3026) would have banks pay two per cent from August 1st to November 30th, four per cent from December 1st to March 31st, and six per cent from April 1st to July 31st each year. This proposal assumes that money demands and credit disturbances regularly follow the seasons, an assumption which might do much to produce expansion and contraction at the wrong time. The banker is in the best position to know when money demands are such that he can afford to pay six per cent for government loans, and these are times when the credit circulation should be increased or when more money is needed to support that already outstanding. Senator Platt's measure (S. 108) would make the rate discretionary. This might prove effective and without public danger if a minimum of about six per cent were established to insure the use of the government loans for purposes of steadying the market in time of extraordinary demand. If the banks had the opportunity of either borrowing from the government on proper security at six per cent and the government had the option of supplying funds either in the form of gold or paper money to be issued by it, the money rate could never rise far above the established minimum. In such event there would be no limit to the possibilities of expanding credit when needed, except the limits of adequate security for the loans among prospective borrowers.

Our Hopeless Philosophy of Panics

Those who have expressed opinion concerning the cause of the recent panic use the same fatalistic philosophy as was employed centuries ago in accounting for ravages of "black death" and the scourges of small-pox and cholera. From time immemorial the same conclusions have been reached. After learned discussion those in position to command respect for knowledge of financial situations have each time announced that sudden collapses of bank credit have been due to an undefined, intangible, uncontrollable influence called "lack of confidence." Comptroller Ridgely, by process of induction, has given a new interpretation to this vague theory by asserting that the conditions which led to the panic of last October and last November were due "not to lack of confidence of the people in the banks, but more to lack of confidence of the banks in each other."

With such a diagnosis of the malady by those who are looked to professionally for the prescription of remedies, question may be raised as to whether we may ever hope to find relief from financial ills. May we hope to correct a financial disease that is diagnosed as the result of a mental attitude of persons who may not be located and specifically treated? Congress is asked to pass remedial laws. What legislation will make business safe as against "what some people may think?" How may bankers be required to conduct their business to prevent "some people" from losing confidence? Does not such an analysis suggest that the philosophy of banking is still surrounded by the ignorance and mysticism of the dark ages, and that public inquiry is still lacking in method of scientific research?

Time was when a landslide was attributed to the mental attitude of an evil one; when the breaking of a bridge or the falling of a building was considered as the inscrutable act of some great destroying force. The remedy proposed for such calamity is similar to that at present urged to relieve business, viz., self-sacrifice and prayer as a means of restoring lost faith in an influence for good—a belief which has the power to protect the public against the intrigues of the devil. Since the days of the South Sea Bubble this same mystically vague remedy has been proposed for protection against the collapse of bank credit. Let us have confidence! Restore our faith and we shall be saved!

A Plea for a Scientific Method of Determining the Character of Banking Legislation Needed to Protect the Public from Panic

In search for causes of structural collapse we have come to apply scientific standards to judgment. Were the tower of the capitol building to show signs of weakness during a storm the government would not rest content to set up props till the storm had abated. Were a great office building of New York to fall, no one would think of the prayer of faith as protection against future evils, to be suffered from collapses of similar kind, or of importuning Omnipotence for justice to those responsible for loss of life and property. Inquest would immediately go to the character of materials and workmanship used in construction. Neither would there be mystery or fatalistic philosophy woven about legislation proposed for future safeguards to the community; nor would it be accepted as a satisfactory defense of building management that those in control had yielded to the importunities of persons wishing accommodation and as a consequence the building had been built too high or had been overcrowded, or had had a run on it that carried it and its tenants to destruction. If the structure had been used for purposes other than those approved, or if the owners had connived with officials, or if officers of the law had permitted the superstructure to be carried beyond the point of safety, if the foundation had been overloaded and had crumbled beneath the weight, or if a superstructure had been erected of such physical parts as to endanger tenants or the public, under any and all of these circumstances, tenets of scientific inquiry, premised on experience, would guide in determining responsibility for loss, as well as in the shaping of legislation for the correction of similar evils in other structures built or to be built.

In engineering and architecture, as well as in building ordinances, the guiding principle is: The greatest economy in construction that is compatible with safety. Whatever the cost, foundation and materials must be of such strength and quality as to make the structure safe. In estimating the depth and breadth of foundation, or the strength of materials to be used in any part of a building, a liberal margin of safety is allowed to provide for strain greater than any that may ever be brought to bear.

Should a bridge be under contemplation, then calculations as to the load or strain would depend on the character of use. After the bridge was completed traffic regulations would be framed to protect the public from danger of overloading, and the management would be held liable for violations. Police control would also be exercised to prevent catastrophe. Much of the legislation proposed to prevent collapses of bank credit throws this kind of reasoning to the winds. The drift of opinion has been away from the theory of a coefficient of safety. The banking world is urged by public officials to make a still higher use of structural materials, *i. e.*, to make such adjustments between themselves as will permit the same capital to carry a larger load. No attempt has been made to calculate what burden a particular credit structure may bear without endangering the business public from credit contraction. The argument has been to further reduce the capital cost of banking. In estimating this no account has been taken of the cost to the community of the periodical wholesale demolitions, and the wrecking of other business which have been induced by the banks to depend on them for current funds. The banks may be safe. Yes. But what of those many business interests that have come to rely on bank credit for "cash?" There seems to be an utter blindness to the public aspects of banking; no reckoning is taken of the fact that the forced contraction of credit of even the smallest of banks may cause greater loss and suffering to a community as a whole than would the collapse of the largest of physical structures.

In the safety of a building structure the public is interested as a matter of physical protection to tenants and passers-by. Increased charges for rent, due to the capital cost required to obtain this protection, is not accepted as reason for permission to build an unsafe edifice. At any and every cost public safety is insisted upon. In the safety of a bank it is not physical safety alone that is involved. The business, the fortunes, possibly the lives, of all those who have made arrangements for their current financial needs are directly at stake. Indirectly, a sudden contraction of bank credit to protect the bank itself from collapse may unsettle well-founded business judgments, and produce conditions which may cause business concerns, not in any manner connected with the particular institution which institutes the measure, to topple to ruin. Indirectly, the business interests of a whole community or of a nation may be affected.

Is it not worth our while to proceed in the determination of questions of banking regulation, on the theory that no capital cost is too great if it is necessary to protect the community against sudden contractions of bank credit? May not the same principle of scientific inquiry be applied to the discovery of a margin of safety to prevent collapses of credit, as has been applied to building structures? Of far greater importance to the welfare of the community is it that bank credit shall not be constricted in time of need; of far greater importance that the capital foundation shall be adequate to support every dollar of credit issued by banks, so long as this credit may be needed by the borrower; of far greater importance that a liberal margin of safety shall be required as against extraordinary strain. Would it not seem the part of wisdom for public men and public bodies to pass laws to prevent the overloading of the capital foundations of credit institutions, and over-accommodation rather than that the government shall be content to permit banks to extend their credit *ad libitum?* Is not legislation which requires a bank to do a safe business preferable to the administration of palliatives to the injured, or reliance in the ability of the treasury to prevent disaster by running to the support of toppling credit walls as a means of relieving financial institutions from the necessity of increasing the capital cost of doing business?

Elements of Certainty in the Problem of Elasticity

In this relation it is suggested that banking and credit are just as susceptible to scientific analysis as are buildings and building materials. With all the mystery that has been woven about the subject, every feature and element in the problem of elasticity of bank credit is as capable of exact determination as are the tensile strength of iron, the crushing resistance of stone, or the wind strain on an office building.

In law there is none of the mysticism about credit which is commonly assigned. Credit is an unconditional contract for the payment of money, nothing more, nothing less. So clear is the law on this point that it has been repeatedly decided that any other form of contract or transaction is not credit. In business practice there is absolutely no uncertainty about what credit is. Every business man knows that if he be creditor he can insist on the payment of the amount and kind of money contracted for, and that nothing else may be substituted except by his consent, which amounts to a new contract. If he be debtor he knows quite as well that he must obtain and deliver the money in the amount and at the time contracted for, or in default of such delivery the courts may be asked to intervene and sell his entire estate if need be to procure this money. In the common parlance of the street, credit is a "short sale" of money; this sale is governed by practically the same rules as a "short sale" of bonds or a short sale of wheat. The only alternative to "delivery" is "settlement," or the substitution of a new contract for the original contract of credit.

There is nothing mysterious about bank credit. This is a contract entered into by a banker with his customer, called a depositor, or (in case the bank may be permitted by law to issue) with the holder of the banker's note. The contract is one for the delivery of a definite amount of legal tender money on demand; if the creditor of the banker be a depositor then the evidence of the credit contract is a memorandum of account on the books of the bank and a corresponding memoranda kept by the customer in his own cash book. It is a common credit relation—there is no uncertainty about it. It is identically the same kind of a contractual relation as is a demand credit evidenced by an account on the books of a manufacturer. On discussing the question of bank credit, therefore, we may speak in exact terms without any cavil or misunderstanding.

The mysterious word "confidence" may also be resolved into exact terms. Analyzed to its constituent elements, what has been so vaguely spoken of as "confidence" may be clearly defined. In banking relations that which has been called confidence is a conclusion or judgment arrived at with respect to the value of a credit contract at the time that the contract is made, or a subsequent judgment which reflects itself in the exercise of the option under the contract to demand payment. To illustrate: A merchant takes in $1,000.00 in legal-tender money over his counter. He carries this money to a nearby bank and exchanges it for a credit of $1,000.00, a memorandum of which is entered in his pass-book, as well as the customers' ledger of the bank. The merchant does this because, at the time he makes his "deposit," it is his best judgment that he would rather have the obligation of the bank to pay him $1,000.00 on demand than to have $1,000.00 in lawful money. If this were not his best judgment he would not have made the exchange. "Confidence" in the bank means that, for his own purposes he values $1,000.00 of unsecured credit of this particular institution more highly than he values $1,000.00 of gold coin of the United States or other currency.

The reason why the merchant has "confidence" in the bank is just as susceptible of analysis as is the definition of what constitutes "confidence." Why does he value the contract of the bank to deliver money at a future date more highly than money itself? The customary answer shows the inconclusiveness of the present method of approach. We are vaguely told that it is because the merchant has "confidence." That is to say, the merchant has "confidence" because he has "confidence," and conversely he does not have "confidence" because he does not have "confidence." Upon analysis it is found that the merchant's judgment as to the value of the bank's credit is premised on three other conclusions: (1) That "the banker is honest"—which being interpreted means that, in the opinion of the merchant, the banker will do all in his power to meet his credit contracts on demand without resort being had to the court to enforce them; (2) that, in the opinion of the merchant, the banker is conducting his business in such manner that he will be able to fulfil every promise made by him to deliver money on demand according to the terms of his contracts; (3) that, in the opinion of the merchant, all persons with whom he currently deals have, or will have, also arrived at the same conclusions as has he with respect to this particular banker.

Elements of Danger and Uncertainty

It is in facts and conditions which warrant or fail to warrant the second of these conclusions that the chief element of public danger lies. Small loss has been suffered from mistaken judgments in arriving at the first conclusion—the honesty of bankers. Reputation for honesty is brought to a test with each transaction. A single transaction which shows dishonesty will destroy all possibility of further sales of credit—in other words, will destroy the business of the banker. Dishonesty eliminates itself from the banking business. For protection against dishonesty little or no legislation is needed. Neither can legislation be made effective with respect to the third conclusion. Legislation cannot compel a trading public to accept the credit of any particular institution or class of institutions in exchange. It is with the second conclusion only that laws may effectively deal, and in the character of dealing with this lies the whole problem of elasticity and the safety of our financial system. The conditions under which the banker is permitted to offer his credit for sale, the manner in which he shall conduct his business, the amount of capital required, the character of equipments in which his capital shall be invested, the amount of obligations to depositors that he will be permitted to incur to each dollar of capital invested in the business, the amount of minimum cash reserve required, the conditions under which he will be permitted to loan to and borrow from other banking institutions, the conditions under which he will be permitted to obtain aid from the government, the character of business to which he will be permitted to extend credit, the character of assets he will be permitted to buy in exchange for demand credit, every phase and aspect of his business which enters into the customer's judgment as to ability to pay, are subject to the most exacting regulation and critical current examination of public officers.

It is also to factors of this class that every question having reference to panics, runs, collapses of credit, credit expansion, credit contraction, and increased and decreased demand for money relates itself. These factors are also subject of record and current report and may be classified and summarized for purposes of exact determination of elements of strength and weakness, of safety and public danger. Not only may instruments of precision be used in the diagnosis, but each remedial reagent may be scientifically tested in its application.

The True Function of a Bank

Critical analysis and regulative measures must have reference to the function and purpose of the commercial bank. This factor of the problem also leaves no room for uncertainty. The business of a commercial bank is essentially the business of selling its own credit for the money and commercial paper offered in exchange for the kind of "cash" which it created. The high value set on the economy of bank credit as "cash" for use in the making of purchases and payments, has caused business men to take nearly all the money and commercial paper received by them in their own business to the bank, and to offer them in exchange for the bank's credit accounts. The check and the draft are simply the instruments by which the bank's customers demand payment, or transfer certain portions of their bank credit to others—these transfers being accepted in lieu of money. Selling stocks and bonds, underwriting the purchase and sale of corporate issues, collecting the purchase and sale of coin and bullion, are not banking. They may be incidents or accessories to the business, but any one or all of these functions may be exercised by those who have no powers to engage in the business of banking.

From the point of view of ability to pay demand obligations, money is the only equipment needed by a bank. With the question of profit eliminated the only form in which a bank need carry either capital or deposits would be legal-tender money. From the point of view of making a profit, and at the same time of conserving its money-paying ability when money is demanded, the banker seeks to keep all his capital, as well as the money received in exchange for his credit, invested in income-producing assets, which are readily converted into cash when needed. If the capital of the bank alone were held in reserve for the meeting of demands for money, the business of the bank would be to exchange its own credit for money and other cash assets, and to exchange these for commercial paper, etc., bearing an attractive rate of interest. Were the entire capital not currently needed as money reserves, then the portion not currently needed might be invested in such manner that the investments might at all times be converted into money without loss, and without waiting for maturities. So considered, the business of banking has two distinct sides, viz., a credit-trading side and an investment side.

What Amount of Capital Is Required to Make a Bank Safe

Accepting the only logical definition of capital, viz., funds or property contributed by shareholders or other proprietors, for the purpose of providing an enterprise with the resources or equipment permanently or continuously necessary to the safe and successful operation of the business, and again we are on scientific ground. Again the problem of elasticity lends itself to exact analysis. The profits of a bank as such are derived from sales of its credit. The amount of its banking profit depends on the amount of credit it can exchange for money and other cash or income-producing assets—or, to use the parlance of bankers, on the amount of its "deposits." The equipment necessary to the highest success of a bank is such an amount of money held in reserve as is necessary to meet demands for payment on all the credit which it is able to sell; or, again, to use the parlance of bankers, a money reserve large enough to meet the demands of depositors. The amount of capital needed by a bank, therefore, is such amount as is necessary to provide it with its office equipment and with an adequate money reserve. If the capital of a bank is not sufficient to do this with safety, it is under-capitalized. In such circumstances the bank would be in much the same situation as a railroad that is carrying a part of its construction on floating debt, or a manufacturer who has supplied himself with machinery by means of demand loans. If his current loans are called he must sacrifice some of his product or current business to meet them and possibly be forced to sell his plant also.

This does not mean that a bank which does not capitalize all its equipment, including its money reserves, is in danger of insolvency. A bank as well as a manufacturer may at all times be solvent, and may so conduct its business as to meet every credit obligation without a dollar of capital. If it rent its banking room and furnishings, if it invest its credit in money or other assets that may be quickly converted into money without loss, it may meet all obligations, provided the income on its loans is sufficient to pay expenses. But such a bank is in a position at any time to lose its business by being forced into liquidation. In other words, it cannot fall back on a capital fund to protect its deposit obligations, and, therefore, as was the case with many institutions in the recent panic, it may lose its depositors while other institutions that are able to protect all credit obligations without forcing loans will get them.

What Is the Public Interest in Bank Capitalization?

The bank is not the only one to suffer from lack of capitalization. The customer is vitally interested, so vitally interested that the bank always makes a point of advertising the amount of its capital as an inducement to the customer to buy. The public, as a whole, is interested, for the further reason that banking capitalization is one of the prime factors in elasticity, both of the volume of money and of credit. Public interest in the capital equipment, therefore, may be said to be twofold:

(1) *Each individual is interested in the bank as an institution chartered to provide a convenient form of "cash."* The one who sells his note or his money to a bank in exchange for its deposit obligations does so by reason of his desire to provide himself with the current funds, in convenient form needed for his immediate uses. In establishing a banking relation he desires to deal with an institution that can safely sell sufficient credit to meet his current financial wants. For the same reason, it is his desire also to deal with a bank that at all times is able to maintain the account which he has contracted for without calling his loan or diminishing his accommodation, so long as accommodation is needed, provided he has good commercial paper to offer in exchange.

(2) *The public at large is interested in the manner in which banks are managed on account of the effect which a rapidly increasing and decreasing volume of available "cash" has on prices.* By reason of the medium of exchange being so largely in the form of bank credit instead of money, the country at large, or the combined business interests of the community and of the nation, demand that there shall not be an expansion of bank credit which cannot be supported so long as the current funding need which created the credit is present, and conversely, that there shall not be sudden contractions in the medium of exchange brought about by efforts of banks endeavoring to convert accommodations to customers into money to enable them to make deliveries on deposit obligations.

It is such a condition as this that prevails in time of panic, and these are the conditions that should be met by adequate and safe capitalization. By application of methods of research, it is entirely possible to know whether the past emergencies could have been met if the banks of the United States had been required by law to capitalize their equipment, including their legal reserves; we would also be able to reach a scientific conclusion as to whether much of the present danger might be avoided if banking reserves were not tied up in loans to speculators "on margin."

Conclusions That Have Been Reached as a Result of Experience

As a result of the experiences of the last few decades, and of reflection on the numerous collapses suffered in institutional credit, certain conclusions have been reached that may be said to be generally accepted. These are as follows:

(1) That some provision should be made for increasing the elasticity of our currency, as well as for increasing the elasticity of bank credit.

(2) That the present law which permits the issue of bank notes was framed for the purpose of stimulating a favorable market for government bonds, and that in framing the National Bank Act no thought was had to giving elasticity, either to the currency or to bank credit.

(3) That the means employed by the government for encouraging the banks to invest in government bonds (viz., permitting them to hypothecate the bonds purchased for their par value in notes, without the payment of interest on such notes sufficient to keep them out of circulation in time when they are not needed) encourages the banks to encumber their capital to such an extent that they are unable to obtain notes from the government when needed.

(4) That the frequent and destructive panics and periods of money stringency from which business has suffered have in every instance been related to banks; that, in each stringency, the dominant demand has been a demand for money which the banks are unable to supply except at the expense of a very great contraction of commercial credit.

(5) That under the operation of the present law the only effective relief which may be given by the government to relieve money demands on the banks is through treasury "deposits."

(6) That the National Bank Act and the several state acts are defective in that they permit all the banks outside of the central reserve cities to loan their "legal reserves" and still count these

loans as reserves for meeting obligations to pay depositors, the effect of which has been, not only to permit the banks to unduly expand their credits, but, also, to make a large part of the money and credit of reserve institutions available for speculation only, thus encouraging "margin trading," during periods of low interest rates, unsettling the investment markets and endangering the whole system of commercial credits, for the protection of which the reserves are created.

Neglected Aspects of the Currency and Banking Question

While there is practical unanimity of opinion with respect to the subjects above enumerated, banking opinion has scarcely gone further than to conclude that something is wrong. Experience, especially our recent experience, points to other aspects of the currency and banking situation that have been entirely overlooked or seldom referred to in discussion. Before constructive legislation may be intelligently enacted, the following questions must be answered:

1. *What amount of elasticity must be provided for?*

The question has a double bearing, and suggests inquiry with respect to two aspects of the financial situation: (*a*) What is the variation in the business demand for money, and (*b*) what is the amount of elasticity in bank credit required to meet legitimate business demands? That no serious attempt has been made by legislators even to approximate a scientific conclusion appears from bills now pending. The limits to be placed on issue powers of banks range from $250,000,000 to not less than $2,000,000,000.

2. *What kind of protection is needed?*

A large number of bills have been brought forward at Washington to the end that the deposit obligations of banks may be insured. That this element of protection is seriously contemplated is shown by the large proportion of all the banking bills containing such provisions and the broad representation and high standing of their authors. Among them may be named Senators Raynor, Culberson, Brown, Nelson, Curtis, Gore, Scott, and Owen, and Representative Fowler. Deposit insurance will doubtless be forced by state legislation, if not by the federal law. But assuming that the deposit obligations of banks had been fully insured, would this have materially relieved business distress during the recent panic?

Assuming the average time of bank credit accommodation to be sixty days, the actuarial risk of loss amounts to about 1-120 of one per cent. Do stability of business and sane judgment require legal protection against loss from insolvency of banks so much as legal protection against the violent and dangerous expansions and contractions of bank credit? Are not the direct losses to depositors negligibly small as compared with the disasters which follow the efforts of banks to obtain money with which to protect themselves from insolvency, or from inability to maintain their own credit accounts when demand is made by other banks for settlement of balances?

3. *What are the influences which bring about dangerous expansions in credit?*

From 1904 to 1906 the expansion in deposit obligations of commercial banks of the United States amounted to about $2,000,000,000. This was the amount by which this form of cash was increased within the two years immediately before the present stress for money became seriously felt. It is not suggested that any danger lies in the mere fact of expansion, but it is now a matter of experience that this particular expansion was dangerous. It is also a matter of history that the havoc wrought by every panic that has occurred during the last half century has been the result of the contraction of a dangerous expansion of bank credit. Looking toward a proper appreciation of the influences which bring about expansion, the following questions seem pertinent. In time of financial ease, has it not been the constant effort of banks to increase their demand obligations to depositors without any regard whatever to their own capitalization? As a means to this end, and at the same time keeping within the money reserve requirements, have not the national banks in reserve cities offered interest and every known inducement to other institutions for money loans which might be carried as reserves to support a credit expansion that ultimately became dangerous?

4. *What are the incidents to credit contraction?*

Without adverting to the results of contraction of credit so disastrously felt and heroically met by the business community, the recent panic suggests the following specific inquiry. Is the financial problem which confronts the community in time of panic primarily a currency question, or is it essentially one of the inability of banks to maintain a volume of credit which they had previously issued to merchants and manufacturers for use as cash in their current business? Is it not the purpose of these issues of credit to increase the profits of the bank? Have not a large part of the reserves which have been held by banks to support these increased credit issues been borrowed from other banks, instead of being provided for by capitalization? Have not money stringencies been largely due to demands created by these banks for the payment of reserve loans as a means of protecting their own customers' accounts? In these several relations the following statement of facts taken from the report of the comptroller is illuminating:

Banks.	Individual Deposits.	Money Reserves.	Percentage of Money Reserves to Deposit.	Money borrowed from Banks and the U. S. Treasury
Savings Banks	$3,495,410,087	$28,666,882	.008	$ 8,179,275
Loan and Trust Companies	2,061,623,035	104,258,066	.050	167,872,759
State Banks	3,068,649,860	254,001,570	.083	211,007,202
National Banks	4,319,035,402	701,623,532	.162	1,738,775,664
Private Banks	151,072,225	8,710,484	.058	2,844,638
	$13,095,790,609	$1,097,260,534	.084	$2,128,679,538

There are two bills now before Congress which make a clean breast of the reserve loan practice. Senator Culberson (S. 3027) would have "every national bank . . . keep on hand in its own vaults the reserve of lawful money provided by law." Senator Heyburn (S. 3044) would require that when a bank shall permit its money reserve to fall below 20 per cent it "shall not increase its liabilities by making new loans other than by discounting or purchasing bills of exchange payable at sight," and would also during such period forbid the payment of dividends. These measures would seem to be weak at two important points, viz., (1) they do not provide for the investment of reserves and the use of these investments as security for government loans or issues; (2) they do not attempt to co-ordinate reserves with capitalization, *i. e.*, under either measure the money reserves may be borrowed money.

5. *What would be the effect of the capitalization of legal reserve requirements?*

To know what amount of capital would be required to provide for redemption equipment equal to the amount of the legal reserves required of banks (after taking out of the capital and surplus such unavailable assets as the cost of banking houses, real estate and the margins on securities deposited as collateral for issues, government deposits, bonds borrowed and other secured loans, and also after providing for the necessary working balances to provide for exchanges in other cities) would require a special inquiry on the part of the comptroller of the currency. As nearly as may be approximated, without an official inquiry, such a provision of law would add not far from $500,000,000 to the capital of national banks, as a prerequisite to incurring their present deposit obligations, and, if applied to state institutions as well, would add not far from $1,000,000,000 to the total bank capital of the country. Whatever might be the amount, would not this added capital contribute materially to give increased stability to business and increased elasticity to bank credit? Even though it add to the capital cost of bank credit, would it not be an economy to the business world? Presumably some such result was in the mind of Senator Owen when he introduced his bill (S. 3987) by which he would forbid a national bank from incurring deposit obligations in excess of ten times its capital and surplus. He would also limit speculative loans to the amount of a bank's capital and surplus (S. 3986). In view of the known facts, however, these measures would be of no practical effect. The ratio of capitalization to deposit obligations has been reduced two-fifths since 1896. Should not immediate steps be taken to make the foundation of our credit safe, and provide for adequate expansion without endangering the public?

6. *Is it either safe or expedient to have a large volume of bank notes permanently outstanding?*

For two decades the banking interests fought against the continued use of greenbacks. The result of the agitation was a compromise limiting the form of credit money to $346,000,000. During the last few years the bank note circulation permanently outstanding has been increased over $400,000,000. In this relation the question may be raised as to whether Gresham's law does not operate on permanent issues of bank notes as well as on greenbacks. Have we not in recent legislation and practice with respect to bank notes employed a form of money that is cheaper to the banks than greenbacks? Have we not in the volume of bank notes permanently outstanding a monetary device more dangerous than greenbacks, for the reason that they not only drive gold and silver out of the country, but at the same time encumber the banking capital, by means of which gold and silver might be brought into the country when such a need is felt. In the legislation now before Congress few measures have any regard for this situation. The bills of Senators Knox (S. 1239), Raynor (S. 2954), Aldrich (S. 3023), and Owen (S. 3988) follow the recommendation of the President, viz., that the bank note currency should be taxed sufficiently to make it an emergency currency. Senator Knox would tax all issues secured by United States bonds at five per cent and all issues having other collateral security seven per cent. This is subject to the criticism that such a tax imposed, without refunding the national debt, would at once operate to reduce the price of United States bonds, and therefore would amount to confiscation of the premium. Senator Aldrich has met this moral question by providing that the tax on issues against United States bonds remain practically as at present, but would impose a tax of six per cent on all other issues. His measure, however, becomes practically ineffective in that it makes no provision reducing the permanent bank note circulation; in fact, by the terms of his bill, the permanent note circulation might be increased, and it specifically provides that all banks may thus encumber 50 per cent of their capital and surplus. Senators Raynor and Owen would impose six per cent during the first four months of issue and eight per cent thereafter, permitting any security to be accepted that may be approved by the Secretary of the Treasury.

7. *Should government funds be used to give more than temporary relief?*

In this relation it is to be conceded that bank notes are nothing more nor less than loans of government money to the banks without interest. The government loans unsigned notes to the bank for issue in exchange for a collaterally secured obligation of like amount to the government. Unquestionably government "deposits" stand in the category of collateral loans without interest. Having this fact in mind, the question is fairly presented: when business interests are endangered by reason of the inability of banks to maintain the volume of credit needed, should government loans be looked to to give more than temporary relief? Do not loans by the government without interest, or at a low interest rate, cause the banks to rely on "deposits" instead of their own capital? Will not such a practice cause the banks to retain these loans when not needed, unless the government arbitrarily enforces payment against their wishes? Do not deposits, without a rate of interest which will cause the banks to repay the loans as soon as an emergency is passed, leave the whole situation subject to the discretion of public officials, instead of making regulation automatic? Does not a large volume of government deposits or loans without interest to the banks, weaken instead of strengthen the credit situation, and leave the banks without the possibility of obtaining collateral aid when a new emergency arises?

8. *Is a "great central bank" a better institution to give collateral support to our banks than the treasury?*

The large bank idea has taken two distinct forms, one as expressed in Senator Hansborough's bill (S. 547), giving to an institution controlled by other banks the widest banking powers, both of loan and deposit, and the other as expressed in Congressman Frones' bill (H. R. 13,845), giving to a government controlled institution, with capital of $100,000,000, powers of issue only—all issues over $100,000,000 to be taxed on a graduated scale of from six per cent to ten per cent per annum, thus making the issues in excess of capital an emergency circulation. Assuming that a large permanent issue of bank notes is not a good business expedient, and narrowing this part of the problem down to a choice between a great bank and the United States Treasury, in case the funds of the United States Treasury were not permanently loaned to banks, may not the United States Treasury do all that it would be safe for a great central bank to do? In case the funds of the government were loaned or deposited with a central bank, would they not operate on the financial system in the same manner as if loaned to other banks? Having in mind the arguments of prominent bankers, the further question may be asked: Does the cumulation of a treasury surplus operate to deprive the business of the country of the use of money held by the government, or is this surplus drawn from the money stock of the world, thus increasing the money stock of the United States? If the conclusion is reached that it does operate to increase the money stock of the United States, with adequate money reserves maintained by the banks, may not a treasury surplus be held with advantage as an emergency fund for any use to which it might be applied, thus placing the United States in a stronger position financially than any other nation—a situation which might go far to relieve this country from the incidents of falling markets and failing credit abroad? Would not legislation which would permanently encumber or tend to encumber the government surplus or lower the capital strength of the banks, operate to make this country still more dependent on foreign states, and to relinquish a financial advantage which by nature and trade position it enjoys?

What the Federal Government May Do to Correct the Evils of State Banking Legislation

One of the prime elements of weakness in our credit situation—one that has done much to unsettle business and cause violent expansions and contractions of credit—has been the laws of states permitting banks and trust companies to organize and do business without adequate capitalization, or even the indirect restraint on over issues of credit imposed through reserve requirements. Among the worst institutional offenders have been trust companies. These corporations have been strictly controlled so far as the initial capital security given to trust estates and trust obligations are concerned, but in their banking and common credit relations they have so conducted themselves as to rank them with institutions that, in 1837, would have been called "wildcat" banks. That is to say, their capital has been largely for the protection of trusts; they have also been permitted to do a banking business; for this banking business no separate or extra capitalization has been required; having their capital largely tied up in security deposits with state authorities, they have been permitted to incur obligations to depositors without even the money-reserve requirements imposed on state banks; when similar money reserves are required, they have been permitted to borrow them instead of being required to furnish them out of their own capital; in fact the laws specifically permit a portion to be in the form of loans to other institutions, enabling them to carry mutual loans in lieu of money reserves, a fault which attaches to state banks as well as to trust companies. They have also been permitted to engage in underwriting and other practices, from which national banking institutions, on grounds of public policy, have been debarred.

The net result of such privileges has been:

(1) To force on national banks larger capital cost than is required of state institutions.

(2) To enable the state banks and trust companies to offer to customers interest on their own deposit obligations as an inducement to purchase their credit, in some instances as high as 4 or 5 per cent being paid on their deposit liabilities.

(3) While they are thus stealing the customers of national banks they have been in a position to force them to carry the money reserves on which the trust companies relied in time of emergency to support their own credit.

By reason of these laws and the more favorable conditions for profitable employment of capital, the state banks and trust companies have been making large inroads on the business of national banks. The following summary of individual deposits from New York City and Brooklyn is taken from the last report of the Comptroller of the Currency:

Banks.	Individual deposits. 1906. Millions.	Individual deposits. 1907. Millions.	Increase. Millions.	Decrease. Millions.
National banks	653.3	600.8	....	52.5
State banks	323.7	336.9	13.2	....
Savings banks	925.1	962.6	37.5	....
Loan trust companies	790.8	840.4	58.6	....
	2,692.9		109.3	

While the state institutions have been gradually taking the business of national banks, two-thirds of the entire money reserves are carried by national banks:

Banks	Money Reserves 1906. Millions.	Money Reserves 1907. Millions.
National banks	227.5	234.6
State banks	54.6	65.9
Savings banks	6.4	6.4
Loan trust companies	33.4	56.8

The wisdom of attempting to directly control the banking legislation of states may be questioned. There can be no question, however, about the wisdom of making conditions so favorable to national banks which are doing business in a manner to protect the community that they can succeed. To this end, one of the points of attack would be the present reserve law; another would be to refuse to permit a national bank to receive deposits or in any manner to become directly indebted to or to do other than a collection business with an institution having inferior capital requirements; again, by permitting national banks to increase their circulation on collateral security *ad libitum,* as well as to procure collateral loans from the United States Treasury in the form of deposits, upon the payment of 5 or 6 per cent, the credit accounts to customers of national banking institutions might always be protected. If state banks and trust companies were required to carry their own reserves, do their own clearing, support their own credit, and the collateral aid of the United States Treasury were limited to the national banking system, both the national bank customer and the bank itself would soon recognize the advantage of compliance with laws for the safe conduct of business.

THE LESSONS OF THE PANIC OF 1907

By S. Wexler,
Vice-President Whitney-Central National Bank, New Orleans, La.

Notwithstanding the fact that panics have occurred in nearly every decade of this century, in some one or more of the great commercial countries of the world, all due more or less to the same primary causes, and that volumes have been written for the enlightenment of future generations setting forth the causes and lessons of each crisis as it occurred, the financial convulsion of 1907 proves that the lesson must be constantly relearned and that the human will is too weak to resist the impelling greed for wealth and ambition for commercial power. Every effort, therefore, to teach the lessons of the panic of 1907 should be eagerly grasped in the hope, however illusive, that it may point out to future generations of business men the dangerous currents that lead to disaster, and how to avoid them.

Much of our trouble has been caused by the blind worship by the lesser lights of the great commercial and financial luminaries. Men famed for wealth, however acquired, in charge of the great financial organizations, have allowed their names to serve as the loadstone to draw the small investor into innumerable unsound financial schemes which, had he carefully investigated as he does matters pertaining to his own business, he would have scrupulously avoided. The small investor may, therefore, learn that however attractive the prospectus, however alluring the promised profit, however great and high the promoter, his own careful investigation and the application of his own sound business judgment must be the only safe guide to his investment.

The promoter should learn from this panic that he must be classed either as an honest architect of sound financial plans or an ordinary grafter, and that there is a field for the wise and foreseeing student of conditions and opportunities, which he can honestly make attractive to investors, while for the unscrupulous promoter of get-rich-quick concerns, the dishonest predator upon innocent wealth, there yawns the jail or the suicide's grave.

In this connection the press, through the medium of which nearly all great undertakings are advertised, may also learn its lesson. Many of our most prominent newspapers have, for money payments, been accessory to the frauds which have been perpetrated upon the public. They have advertised mining companies whose sole possessions consist of a hole in the ground in some remote district in the West, and a sumptuous office in the neighborhood of Wall Street, stocked with clippings inspired and paid for, which they widely disseminate among the public. The proper functions of a newspaper, viz., the education of the people and the molding of public opinion in legitimate channels, seem to have been forgotten in the mad rush to increase circulation and dividends, and many sheets made famous by their great founders, to-day publish anything for which pay is received, or which will make the paper sell.

These newspapers thus become *particeps criminis* to many of the wind-inflated schemes, the bursting of which, with their consequent losses has helped to destroy confidence. While the freedom of the press is guaranteed under our constitution and is a most valuable safeguard of our public liberty, papers publishing dishonest financial schemes, sure-thing racing tips, injurious patent-medicine advertisements, the claims of indecent and fake medical practitioners, etc., should be just as much subject to fine or suppression, and their owners to imprisonment, as the individual who steers the innocent into a gambling den.

The merchant who has expanded his business upon the liberal credits proffered by note brokers, to such an extent that he has looked upon such borrowed money as a part of his capital, has suffered likewise during these strenuous times, and he can well and profitably learn that unwieldy stocks of goods and too liberal lines of credit in times of great business activity, may become the boomerang of disaster in the kaleidoscopic changes which our affairs frequently undergo. He should also learn that his capital should be kept liquid and in his business, and not invested in the stocks of other companies, which cannot be converted into cash when needed, nor used as collateral for credit.

The manufacturer has been a party to the mistake of the merchant, in overselling his output, delaying shipments in the season when the goods might be sold and forcing the merchants to anticipate their wants long in advance of any certainty of proportionate demand. The cancellation of orders he is compelled to accept and the shutting down of his mills may well teach the folly and unfairness of this course. The manufacturer may also learn that the enlargement of plants, the installation of new machinery on borrowed money, is a dangerous practice and that, though with apparent success, he is building upon a foundation of sand.

The banker has also his lesson to learn, from the occurrences of the past few months. He must know that the man entrusted with the liquid capital of the nation and with the savings of the multitude, should not be a gambler or speculator in real estate and stocks. He must know that the funds entrusted to him are as sacred from his own depredations as from the cracksman who blows his vaults. He should see clearly that he must choose his profession, and that if it be that of a banker in a state or national institution, he must disassociate himself from speculation and schemes, and devote his entire time, thought and energy to the interests he has sworn to conserve. The contrary course pursued in a few instances, in New York and elsewhere, has done much to destroy confidence and has caused the extraordinary hoarding of money, resulting in the panic of 1907.

The public servants, such as the railroads, steamship lines, trolley companies, etc., must have learned ere we reached the acute stage of this panic, that the people cannot "be damned," that monopoly, though in the nature of things an incident to their franchises, cannot disregard the life and comfort of the public, that in future they must not wait to be forced to treat the public fairly, but must meet them and redress their wrongs willingly and even anticipate their wants, unless they wish to imperil their very existence. On the other hand, the public must not be unreasonable or unjust, and must not expect a service disproportionate to the traffic. Our wonderful growth in the past century has been to a large extent attributable to the rapid extension of our railroads and their efforts to settle immigration along their lines.

The individual termed statesman, but more often deserving the cognomen of politician, may well learn a most important lesson in fidelity to his country and appreciation of her needs. He is most often chosen, not for his peculiar fitness for his duties, but because he is a "good fellow," a liberal spender and a good stump speaker.

He frequently goes to our legislative halls without even a familiarity with the Constitution of his country or of his native state. But few know the first principles of the important questions of tariff, finance or revenue. Most measure a question by how it will look to their constituents and often prefer to vote wrongly than correctly, subject to the necessity of explaining at home. We learn that we must send better men to make our laws, and that real students, politically disinterested, should be consulted in framing our important measures.

No greater evidence of the lack of patriotism or inability of our legislators can be shown, than their attitude on the currency question now pending. This question, involving the very fundamentals of our commercial and financial systems, is at this moment the subject of political bickerings and policies that are a disgrace to the nation. Our Senate committee has framed an iniquitous bill which is shamefully in the interest of a few private bankers who hold a large amount of unsold railroad and municipal bonds, and is without a scintilla of the principles of sound finance; but, being a "party measure," we have still to hear the voice of a single Republican in protest. The House committee in turn has presented a bill which is violently socialistic, providing that the strong and safe bank shall guarantee the weaker ones, making the banker who conducts his business safely and conservatively, pay for the deficiencies of those who are reckless and inexperienced. Yet, we hear no violent protests against this bill, which is contrary to every constitutional principle of right. Must we learn from this that our legislators are without the ability to frame a proper and consistent law, or that they are lacking in fidelity to their country and shirking their responsibility for fear of losing office? Let these gentlemen learn the valuable lessons of the hour and read the clear handwriting on the wall, that unless this Congress passes sound currency legislation and makes proper amendments to the national banking law, we may be called upon to write the lessons of the panic of 1908; and with the distrust of capital and the suffering of labor incident thereto, the next lesson may entail internal social and political complications the contemplation of which may well cause even the conservatives serious alarm.

Our great Executive can learn mighty lessons from the present. He should realize that the man does not exist, who knows everything from the law of the Sagas to bear killing in the swamps, that the greatest men have been either the specialists or those who, with the acumen and judgment of human nature, have had the capability to select wise advisers. He should study conditions and apply remedies in such doses as will cure and not kill the patient. He should be careful in correcting evils and punishing wrongdoing, not to inflict greater injury upon the innocent than on the guilty. He should learn more the use of expert commissions, and have more regard for their recommendations. Men can be selected in this great country, capable of judiciously solving any question for the public good, but they are men whose vocations, study and training have peculiarly fitted them. His hold upon the affections of the public and his unimpeachable honesty and strong patriotism, place him in a better position for the correction of existing evils and the betterment of our conditions, than any other who has ever sat in the Executive's chair, and it requires but the application of carefully thought-out methods with sound and conservative principles of good government, to bring about the restoration of confidence and the return to normal social and financial conditions.

The people must learn that extravagance is not comfort and that ostentatious display of wealth not only denotes illbreeding, but promotes anarchy and socialism. They must learn something of that quality which the Germans call "Gemuthlichkeit," which means comfort and contentment, the willingness to be satisfied with prosperity without stretching every enterprise to the point of breaking. They should become imbued with a greater desire for the modest comforts of home life, and in turn instill such ideas into their children, so as to change at least that characteristic of our people, that we term "strenuosity," into a more modified form of applied energy. They must discontinue their antagonism to wealth and corporate power when not exercised for evil, and must have the courage to do right and to be fair to all men, whether they be the representatives of millions or the toilers by the day. They must not believe, because some railroad presidents employ their offices in stock jobbing, or some bankers prostitute their offices for gain, or some politicians are corrupt, that all men in such professions are of similar character.

Let us then all learn that industry and effort and venture must have their reward; that men do not traverse the Plains, tunnel the Rockies and divert the courses of streams, simply to find investment for capital to make a moderate interest; and that, therefore, prospective results may be justly if not excessively capitalized.

Many more lessons might be referred to, but the salient ones have been given, and we can learn to encourage our neighbor in the conviction that we live in a land blessed with the sweetness of health and plenty, needing but the magic touch of higher education, deeper home patriotism and greater confidence in each other.

THE OBSTACLES TO CURRENCY REFORM

By Lyman J. Gage,
Ex-Secretary of the Treasury.

The first evidence that a financial crisis had arisen in the late months of 1907, was found in the banking situation in New York City. The conditions necessary to produce it had evolved slowly. These conditions were an increasing expansion of bank credits, payable on demand, given in exchange for obligations, whether payable by *their* terms on demand, or at a future date, secured as to *payment* by certificates of stock ownership in some corporation, or by debt obligations, redeemable by their terms at some distant period of time. There then was, and long had been, an accepted theory that good investment securities dealt in on the New York Stock Exchange were at any time convertible into cash through a sale in the open market. One of the "lessons" learned is that the theory stated is true to a comparatively narrow degree and, put to a serious test, it utterly breaks down. We have learned that where all become "would-be" sellers, there is no power to buy. We have learned in a new and impressive way that expanding prices, stimulated by expanding credits, will at last lead to a crisis which must be faced.

Such a crisis was reached in the early autumn months of 1907. It was precipitated by calls from the interior for money to "move the crops." Response to these calls weakened the foundation of cash reserve, in the New York banks, to which the great superstructure of bank loans and bank "deposits" stood logically related. Something similar has been witnessed at each recurring harvest season for years past, and in truth it may be said, that in our system of banking and currency, a financial crisis is an annual visitation. Reference to the tabulated movements in loans, deposits and the cash reserve, sufficiently prove it to be so. But did not the crisis of 1907 differ from the crises of recent years? Yes, but rather in the intensity, than in the nature of it. The crisis, with all its necessary incidents of loss and distress, might have been met and overcome as have the yearly recurring crisis to which reference has been made, except for certain aggravating accessories of fake banking and reckless administration brought suddenly into the light of publicity by the exactions of the occasion.

The situation of the Knickerbocker Trust Company and some institutions similar to it changed the condition of things. What would, rightly named, have been a grave crisis became something else, something more fierce, dangerous and destructive. The crisis was metamorphosed into a wild, unreasoning and destructive panic. There is always danger of such an eventuation in every period of crisis, or general financial strain, and our experience goes to show that our financial system offers little or no hindrance to the degenerative process which begins in crisis and ends in panic.

As with other peoples, a crisis is not an unfamiliar experience. Our marked inferiority is shown in the method and machinery which we employ to readjust the conditions which have become acute and threatening. It may be profitable to compare our financial machinery with that of France, as indicated by familiar history.

In 1870-71 France was in a state bordering on complete anarchy. She had fought an exhausting but futile war. She witnessed the triumphant march of the enemy's victorious army through the streets of her capital. She was under duress to pay a thousand millions of dollars of war indemnity to her conqueror. She was obliged to suffer the rise of the Commune—with its régime of riot, arson, bloodshed and ruin. Under circumstances like these, industry of course, suffered, trade and commerce were deeply afflicted, but through all the trying period these were steadied and supported by the continued operations of that great institution, the Bank of France. True, under the exigencies of events—and in the interest of prudence the bank suspended for a time specie payment upon its outstanding note issues, then amounting to some five hundred millions of dollars. These notes, it must be remembered, were not secured by the pledge of security in the hands of independent trustees. They were what must be denominated credit notes, or, if you prefer a name more opprobrious, they were an "asset currency." Nevertheless, by their use the bank continued to discharge its true and proper function with a minimum of interruption and derangement, and at no time in all that trying period did gold command a premium so high, measured by the notes of the Bank of France, as did ordinary paper money command with us, measured by clearing-house checks, at a period of profound peace at the culmination of a year of unexampled prosperity, hereafter to be known as "The Panic Year 1907."

We had no Bank of France nor anything analogous to it. We had, instead, some 6,500 national banks, besides numberless other similar institutions, all of which, with a few remarkable exceptions, suddenly ceased to perform their functions as intermediaries in the exchanges and as lenders of money or credit. The quick consequences,—trade interruption, individual and corporate bankruptcies, the relegation of labor to distressful idleness, are too near and too familiar to our knowledge to need description. We have, I believe, received another painful lesson from which we may rightly gather that our banking and currency system must be put on new and better foundations. I shall not take space to mark out a "plan" for such a system. It may be allowed me here to point out some of the obstacles which must be met and removed as a necessary part of any adequate reform.

These obstacles consist of certain financial artificialities in government finances which, while they exist, make a return to principles dictated by economic law nearly or quite impossible. These artificialities menace the financial strength of the government and embarrass the true path to a wise and adequate system of banking and currency. What are some of these artificialities? When and how were they born? To answer the last question first, they were developed chiefly as a result of the necessities of the government in the Civil War. Of what do they consist? I name them briefly.

(1) The legal tender note—greenback. If it were necessary to issue them in the beginning they should long ago have been retired. They were a device born of a temporary need. They were false to the economic requirements of a true currency. Legally equal to gold as a cash reserve, we witness the anomaly of a debt obligation issued by the government made the legal basis for debt obligations issued by banks, to an amount four times as great. They thus weaken the foundation of metallic money—on which the fabric of our whole credit system must finally rest. It is perceived that non-interest notes payable on demand are an immediate economy over time obligations charged with interest, and this benefit the people refuse to surrender.

(2) The system of national bank notes was also a device to create an artificial market for United States bonds. Their issue and use bear no relation to the true law which should govern in the field where paper money performs its true function. The result is seen in two directions. In the first place it has artificialized the price of government bonds to an extent of at least 20 per cent, measured by the world's standard of value as found in a free and open market, where similar securities are bought and sold. As an incident to this artificialism, the government has become the guarantor of payment for some seven hundred millions of notes issued by more than 6,500 so-called national banks. That is a false relationship. It ought not to continue.

(3) By the drift of events, and through political pressure, there has been injected into the channels of our circulation some six hundred millions of silver now possessed of a natural commercial value, measured by gold, of about three hundred millions, but maintained at parity with gold through the government's pledge to maintain such a parity.

Looked at from the government's side, we have here a direct or contingent liability consisting of United States notes, $346,000,000, silver currency parity, $300,000,000, national bank notes, $700,000,000. This liability is not at all embarrassing to the government at the moment and is not likely to become so, provided we can continuously avert foreign or domestic war, and provided further, that the channels of trade where money circulates, can be to a large degree monopolized by the greenbacks and by silver or silver certificates. It is not germane to this discussion to consider the financial embarrassment which would face the government by reason of its artificial relation to money and currency, in the event of a costly and expensive war. I cannot, however, forbear to invite consideration to what is now everywhere recognized; viz., that a strong military chest and an unimpeachable credit, are as essential to success in war as are armies and navies. To the support of these latter we devote an approximate hundred millions each per annum, but for the sake of economizing a few millions we neglect to fortify our *financial* defense, we drift along in a position which must be confessed as weak if not inexcusable. It is, however, to the reflex effect upon our general industrial affairs that my thought must be directed. I have said that the path to more perfect conditions in banking and currency is blocked by the artificialities developed by our financial legislation.

There would be no proper cause for complaint in this if it were true, as to many minds it seems to be true that the banking function, with its currency features, is a sort of privilege granted by the grace of government to certain favored groups who are thus permitted to exploit the people for their own exclusive aggrandizement. If such a view were the correct one, then the more of obstacles, restrictions and repression the better. But when a correct understanding takes the place of these misapprehensions, then it will be perceived that what hinders, restricts or prevents the just economic exercise of the banking function, interferes to embarass an agency which next below production and transportation ministers most directly to the industrial life wherein our material prosperity must be found.

In every other relationship, existing between men, there is a true law which, if discovered and obeyed, will bring in peace and happiness. So, in the field of banking and currency, there are principles which, recognized and adopted as the rule of action, must bring in as a resultant the highest benefits to all. Our history for the last forty years suggests in the most emphatic way that our banking and currency system has at some points been out of harmony with the true laws which should govern it. Unhappily, too, it is evident enough that if this be true the general apprehension of the fact is not at present wide enough or deep enough to induce the study of first principles, much less to give them the right of way, even if cherished prejudices, or apparent temporary advantages must needs be sacrificed.

Is it then possible for us to recast out statute laws so as to forestall in the future, the shameful situation in which our commercial and industrial interests now find themselves, as a consequence of the sudden, yet necessary cessation of proper functioning by the banking system, which we have been silly enough to call "the best on earth?" Yes, undoubtedly, provided we are able to recognize that principles are superior to make-shift policies. Patch-work legislation will not accomplish it. Invention, however ingenious, will only flatter, deceive and betray us. Only by complete recognition of and conformity to economic law, now fairly well understood by the thoughtful and experienced student—applied and tested as it has been by older and more experienced nations—can the humiliating and costly lesson, furnished by the late "crisis" be made to bear fruit for the healing of the nation.

Impressed by the lesson to be drawn from the late crisis, our Senators and Representatives in Congress assembled, are engaged, to some extent, in considering by what measures the future can be guarded from the disasters which have overtaken us in the past and present time. Two bills of especial prominence are offered for approval. One is known as the Aldrich Bill, offered in the Senate; the other is known as the Fowler Bill, offered in the House. The first named seeks to bring relief to a financial crisis by providing an artificial method through which currency may be issued by the banks in a time of extraordinary pressure. It is a make-shift invention, operating to supplement other artificialities, the existence and continuation of which have been and will be disturbing, unsettling factors in the department of our credit machinery, the right working of which is hardly second in importance to continuous production and uninterrupted facilities for transportation. The Fowler Bill, in marked contrast, betrays in its author a thorough comprehension of what may be called the fundamentals in banking currency and exchange. Its scope is comprehensive, and it seeks to establish foundations so firm that while mild forms of crisis will and must of necessity occur, the degenerating tendency toward panic will be next to impossible. It eliminates almost completely the present injurous influence of government finances, to which I have referred, and without cost to the government or the people, enormously strengthens our public treasury to meet, if called upon, the emergencies of war. It puts the bank into those natural relations under which it can safely and effectively serve the commercial and industrial needs of the country.

The propositions involved in the two measures are radically different. As the only two which have yet appeared, they justly demand studious attention and careful thought from every citizen.

A NATIONAL CLEARING HOUSE AS A SAFEGUARD AGAINST PANICS

By J. M. Elliott,
President First National Bank of Los Angeles, Cal.

The panic of 1907 emphasized the closeness of even the remote parts of the country to the financial centers, and also the practical impossibility of any one banking institution's standing alone, no matter how carefully managed, in a city large enough to contain several competitors. There is a necessity of co-operation and a need of some strong bond of union among all the banks of a given locality. This may properly take the form of a clearing-house corporation with a charter and capital, through which the financial affairs of the members and all institutions clearing through them could be regulated. It is patent to all who have observed, that a panic is but the converse of the tide of extravagance, high prices and speculation, and if these latter could be curbed or even modified, the former would not occur. If the clearing-house plan for individual cities was extended and a national clearing house formed, of which each one of the local clearing houses would be a constituent part, the trade of the country might be so regulated as to avoid the dangers which bring about these troubles, and though our advance as a people would appear slower, it would be saner and safer in every way.

These local clearing-house corporations which I am suggesting should, in addition to the usual exchange of checks and daily settlement between its members, employ a high-priced auditor, whose business would be to constantly and critically examine into the affairs of the members, and also of all banks clearing through them, and to report to the committee any infraction of good banking principles; it being the rule that any bank offending, would be first admonished, then fined, and finally expelled, if the practices were continued. Among such practices to be reprobated I may mention,—pyramiding bank deposits, paying too large rates of interest, loaning too heavily to any one borrower or set of borrowers—especially directors, organizing a clique to maintain a chain of banks, the use by the officers of the money or influence of their respective banks for their personal benefit.

The national clearing house would be governed by a board elected by the members, and it should have a competent staff which would, through the reports of the local clearing houses, keep in touch with the business of the country. The order of the central association to all its members to decline to handle the checks of any bank which had been for cause expelled from a local organization, would be a penalty that few institutions would care to face. If this national clearing house should fill its mission well, it would not only inspire confidence in itself, but in all of its ramifications, and it would uplift the whole banking business of the country to a higher plane. It would in time surely attract the attention of Congress, and it would be recognized as the proper channel through which legislation would reach the banks of the country. It might in the end so modify the existing laws that no institution would be allowed to receive deposits unless it had a government charter permitting it to do so, and government examination to assist in correcting any untoward tendency. This national association could adopt rules which would keep the commercial banks, the savings banks and the trust companies closely confined to their own special lines.

The bankers of a given locality know quite well the quality of the management of their competitors, but under present conditions, those who are conducting their business in careful and honorable fashion feel compelled to keep silence while the speculative, the unfit, the unfair, and sometimes the fraudulent, competitor is following the road to ruin for himself and incidentally bringing trouble, anxiety and loss to all honestly engaged in the business, besides engendering that lack of confidence in the whole banking fabric which has been built up by the reputable by years of honest dealing. The confidence of its customers in any bank is as valuable as its capital stock, and it is unfair to allow it to be damaged by any one man or institution. If the government cannot provide protection for this valuable asset of ours which we have labored patiently for years to build up, let the bankers of the country band together in some way to protect themselves, their depositors and stockholders.

One other lesson of the financial trouble has been, I think, apparent,—that the bank officers who were interested in many outside institutions or affairs were handicapped thereby. In other words,—the banker, to meet his obligations in the best way, should largely confine himself to his bank.

In the Far West practically the same means were taken as in the East to tide over the recent time of distress. The country banks were very much less affected than those of the cities, and in many cases conducted their business almost on normal lines. In Los Angeles, clearing-house loan certificates were issued, which have at this writing been retired. The ratio of issue was $66^2/_3$ to the 100 of approved securities. The scrip which was issued was merely a certificate that securities representing twice the amount of the face of each paper were held by the clearing-house committee, and its redemption was guaranteed by all the clearing-house banks. The non-clearing-house banks were allowed to avail themselves of the facilities of the clearing-house association in proportion to their needs and capital. There was some hesitation at first, principally by the laboring men, as to the acceptance of these certificates, but after a short time they passed current without any question, and their issuance had the approval of the large majority of thinking people. About ninety per cent of the total amount issued has been at this writing retired, and the ordinary circulation has very largely resumed its place.

TRUST COMPANIES AND RESERVES

By A. S. Frissell,
President Fifth Avenue Bank, New York.

The difference between a civilized and a barbarous country, from a commercial point of view, is that one uses credit largely, and the other but little. Credit rests upon cash; banking rests upon cash. A reserve is the foundation on which the superstructure of credit rests, and it must be broad enough to carry the weight. A reserve is little used in ordinary times, but it is kept not only for a basis of credit, but for actual use in times like the present. In 1893, as well as this year, the clearing-house banks in New York decreased their reserves from 25 per cent to 20 per cent, and by so doing kept the Stock Exchange open, relieved the trust company situation, shipped money to the interior, and in general built a bulwark against extreme fright and loss. Another important thing about reserve is mobility. The clearing-house banks, by acting together without friction or trouble, and by the issuance of clearing-house certificates, automatically helped their weaker members, and the weaker banks obtained such help as was necessary without delay or humiliation. Even before the loan certificates were issued, it was easy for the clearing-house banks, with their accumulated reserves, to pay if necessary the deposits of the three banks which needed assistance and reorganization. Compare this with the halting, irregular, and protracted manner in which the two trust companies were helped! There were lines of anxious depositors outside their doors for weeks. These trust companies could not immediately obtain the requisite assistance. This shows the difference between the disadvantages of the slight trust company reserves, as now managed, and the tried and ample reserves of the clearing-house banks. The claim that additional cash reserve takes money out of circulation is without force if reserves are insufficient.

Deposits of the clearing-house banks in the City of New York have increased from $370,300,000 in 1893 to over one billion dollars, owing in part to the large increase in the production of gold in the world. The clearing-house banks have built up their cash reserves since 1893 from $93,000,000 to $256,000,000. The fact that the trust companies in the Borough of Manhattan have not increased their reserves correspondingly while their deposits have been increasing, from about $224,000,000 in 1893 to over one billion dollars in 1905 has contributed to the present panic. A billion dollars in deposits is a superstructure that cannot be maintained on a 5 per cent cash reserve, and it was sure to topple over.

Time Favorable for Increasing Reserves

There is a difference between the periodical lock-up of funds in the United States Treasury and the gradual increase of reserve by banks and trust companies, because after the reserve has once been accumulated it fluctuates only as the deposits rise and fall. We are in a position similar to that of a country desiring to get on a gold basis. Gold naturally flows where it is most desired. Just at this time the accumulation of additional reserve can be easily accomplished. In the panic of 1893, after the reserves of the clearing-house banks had gone down to 20 per cent, as was the case this year, they increased before the end of the year to about eighty million dollars surplus reserve above 25 per cent. This was on $506,000,000 deposits—less than half of our present deposits in clearing-house banks. The same increase after the close of our present stringency would give the banks over $160,000,000 surplus reserve; should we succeed in getting this amount it would be nearly enough for the reserves of the trust companies. Another reason why this is an exceptionally good time for building up reserves is that the trust company deposits are low, and a relatively smaller amount of cash will be required. A similar situation cannot be expected to occur until after the next panic.

If the trust companies, with or without legislation, will judiciously lock up the coming plethora of money in their own vaults, they will hold, in whole or in part, the gold which has been shipped here in such large quantities, and the rates of discount will not be high.

Trust Companies Should Keep Their Own Reserves

There is a reason for country banks keeping reserve accounts in New York, because their business requires them to draw on New York, but there is no economic reason for a trust company to keep a reserve account in another institution in the same city, other than in a central reserve bank like the Bank of England. A few years ago, even as late as 1897, when the trust company deposits were only $258,000,000, they were small compared with the deposits of the clearing-house banks, and it was not a matter of so much importance, but now when the trust company deposits have been nearly equal to those of the clearing-house banks, the situation is serious.

One objection to allowing the reserve of one institution to be kept in another institution in the same city has developed in the recent panic. Under the reciprocal reserve plan Trust Company A deposits $500,000 with Trust Company B, Trust Company B deposits an equal sum with Trust Company C, and Trust Company C deposits the same amount with Trust Company A, thus making one-half million dollars counted as reserve three times.

A number of the recent reports of the joint-stock banks in London show that even there they have leaned too much on the Bank of England, and that it is necessary for the joint-stock banks to keep a larger reserve in their own vaults.

Call Loans not a Substitute for Cash

It is objected that the cash reserves of trust companies are not necessary, as they do not depend upon the cash, but upon their call loans for fluctuations in deposits. This is no less true of the national and state banks in New York City, but the stock market, as well as all other business which is represented by dollars, depends upon cash. One of the things that the clearing-house banks have to do in a time like this is to see that sufficient money is lent to share and bond dealers, in order that there may be a market for the purchase and sale of securities. In 1873 clearing-house certificates were not issued early enough, and the condition of affairs became so chaotic that it was necessary to close the Stock Exchange for about ten days, and call loans could not be paid. Support comes from the reserves, and the trust companies should do their share.

Difference in Reserves Equivalent to a Rebate

If a town has a railroad rebate, the competitive town without the rebate goes to the wall. The press has shown how a system of rebates has destroyed competition. The present discrimination in favor of the trust companies, that is, between 25 per cent cash reserve and 5 per cent cash reserve, is 80 per cent. If the trust company cash reserves should be increased even to 20 per cent, the rebate against the banks would be 20 per cent—that is, the difference between 20 per cent and 25 per cent reserve. On the face of it the comparative profits of the trust companies and banks may not be of public interest, but a slight examination of the subject shows that good banking is essential to the public good. The competition of the trust companies, both in the city and state, has honeycombed the banking situation; it has tempted the banks, in order to meet the competition, to take long loans for better rates and take undue risks. It seemed necessary for the banks to do this in order that they might pay the same rate of interest as the trust companies did easily with their smaller reserve. The reports of the trust companies, state and national banks in the Borough of Manhattan, show that the trust companies get profit on 92.2 per cent of their resources, as against 70.3 per cent and 70.9 per cent by the national and state banks respectively; these figures show how great the rebate has been against the national and state banks in favor of the trust company business. Even should the reserves of the trust companies be increased to 20 per cent, they could frequently pay 1 per cent more interest than the banks carrying 25 per cent reserve. A few only of the old and established banks have, for themselves, met the situation by refusing to pay interest at all, but this is impracticable for the new or ordinary bank.

The Interest of a Few vs. Public Interest

The banking situation in New York is peculiar. There are banks which have heavy deposits from country banks, and to this extent they are protected from trust company competition. Other banks in Wall Street have large trust company deposits; this enables them to accept the trust company competition with profit. But the majority of the banks in the clearing house, as well as the thirty other banks in the Borough of Manhattan which are not in the clearing house, are not thus situated, and but few state and national banks throughout the State of New York have any of the favorable conditions named above. They protest strongly against the bad banking which is induced by this unfair competition. Two state institutions doing substantially the same business should be under the same regulations as regards reserve, whether called banks or trust companies. The report of the New York State Commission appointed by Governor Hughes, properly tries to help the situation as far as the country is concerned, but the Borough of Manhattan is left to struggle with the difficulties alone, in a modified form.

There are 404 national banks in the State of New York, and 196 state banks, making 600 in all. Many of these banks have long and honorable records. The solution has been proposed by different trust company officers that the national and state banks should become trust companies. It can fairly be asserted that this would not be for the public good.

No Exclusive Right in Time Deposits

There is something amusing about the sacrosanct view regarding trust company deposits. There seems to be an implication that time deposits belong to the trust companies of right. Banks have always favored deposits likely to remain, and in fact, they are the cream of the business.

The majority of the above-mentioned commission tried hard to find some way of differentiating the trust company deposits, so as to arrange for one reserve on deposits subject to check and a different reserve on time deposits, but they found practical difficulties in enforcing any such provision.

Then the commission tried to arrive at what should be the reserve for total deposits. The statistics gathered by the committee, contained in the report, show that

The average gross deposits of the trust companies for three periods (January 1, 1906; January 1, 1907; August 22, 1907) were	$841,000,000
Deduct from this	
Average sums held as executor, etc.	35,000,000
Which leaves net deposits of	$806,000,000

The average deposits represented by certificates were $81,000,000, or only about 10 per cent of the net deposits. To represent this 10 per cent of time deposits, the report allows the trust companies to keep 15 per cent cash reserve on their total deposits, as against 25 per cent cash reserve proposed for the banks in the Borough of Manhattan. This is really an allowance of 40 per cent in reserve to cover the 10 per cent of trust company deposits represented by certificates.

From my point of view this is not fair to the banks, as there are probably many banks which have more than 10 per cent of deposits which may fairly be called time deposits, such as funds awaiting investment, etc. The bank I serve is one, and such banks should be considered instead of discriminated against in new legislation. Why should not those deposits of banks which are really time deposits be considered as well as trust company time deposits? The banks have been driven into paying interest by the trust companies doing a banking business, and should have the same opportunities for receiving time deposits, on as favorable terms as the trust companies. In fact, banks were organized to receive deposits, while trust companies formerly only received deposits by inference. Trust companies already have advantages over banks in that they have a number of profitable functions other than receiving deposits.

Time Deposits Not Tested by Exchanges

The trust companies have argued that because the checks paid over their counters daily are not as large in volume as those which pass through the clearing house daily, it shows that their deposits are permanent, and therefore less reserve is necessary. This may or may not be true, because, taking a merchant for instance, while his average balance may remain practically the same, the transactions on his account may be very numerous.

Conclusion

A reserve for the state banks and trust companies in the Borough of Manhattan of 25 per cent in cash will put them on a par with the national banks, and will make the banking system uniform as regards reserve. Should this reserve prove too high, or too difficult of accomplishment, the reserve called for in the national bank act could probably be modified. At present the national banks are harassed by the unfair competition of the trust companies, as shown by the introduction of bills in Congress tending to give them a better chance to compete with the trust companies. The express intention of the legislature to equalize the reserves of the national banks, state banks, and trust companies, would be a basis under which all would be working together under one reserve for sound banking, instead of working against each other, as is the condition at the present time, and the advantages of sound banking to the community as a whole can hardly be overestimated, in view of the anxiety, loss, and depression of business caused by the present panic.

NOTES ON MUNICIPAL GOVERNMENT

The Relation of the Municipality to the Water Supply

A SYMPOSIUM

Amsterdam, Holland.—G. M. Boissevain, Amsterdam, with the assistance of Mr. Talkenburg, Director of the Statistical Bureau, Amsterdam, and Mr. D. Drost, Engineer and Sub-Director of the Municipal Waterworks, Amsterdam.

Berlin, Germany.—Prof. Dr. Conrad Bornhak, University of Berlin.

Copenhagen, Denmark.—Dr. William Scharling, Copenhagen.

Stockholm, Sweden.— O. Nordenstrahl, Stockholm.

Upsala, Sweden.—G. Laurell, Upsala.

Madrid, Spain.—Chester Lloyd Jones Ph.D., University of Pennsylvania, Philadelphia.

AMSTERDAM, HOLLAND

By G. M. Boissevain, Amsterdam, with the assistance of Mr. Talkenburg, Director of the Statistical Bureau, Amsterdam, and Mr. D. Drost, Engineer and Sub-Director of the Municipal Waterworks, Amsterdam.

History of Establishment of Water Supply to Consumers.—On April 20, 1849, a concession was granted by the municipality of Amsterdam to Mr. C. D. Vaillant for the supply of drinkable water from the dunes, and on June 19, 1851, the royal sanction was obtained for the establishment of the Hill Water Company (principally with English capital), which took over the concession of Mr. Vaillant.

In the years 1852-54 the works of the Hill Water Company were constructed, viz.: An open canal was dug in the dunes at Vogelenzang, near Haarlem, with a length of about two kilometers; a pumping station, three open slow-sand filters and a clear-water reservoir were built in the neighborhood and a twenty-inch cast-iron pipe was laid to Amsterdam via Haarlem, about twenty-two kilometers long. May 1, 1854, the works were opened with eight consumers. On August 17, 1854, the town of Haarlem granted the concession of its water supply to the same Amsterdam Hill Water Company.

January 1, 1855, the length of the pipe lines was already increased to 41.8 kilometers. In the following year the total delivery of Hill water amounted to about 250,000 cubic meters. In the year 1876, a second cast-iron main pipe, twenty-four inches wide, was laid to Amsterdam and was put in operation in the month of May of the same year. On April 1, 1885, the concession to the Hill Water Company was renewed by the municipality of Amsterdam, wherein the obligation was imposed to build a new water supply from the river "Vecht," at Nigtevecht, near Weesp, for industrial and public use, lawn waterings, municipal establishments, extinguishing of fire, etc.

The Vecht water supply came into operation on May 1, 1888. The works consisted of a pumping station with two settling-basins, four slow-sand filters and a clear-water reservoir at Weespercarspel; an intake at Nigtevecht with a forty-eight-inch cast-iron feeding pipe of a length of nearly 4,500 meters to the above-said pumping station, two head-mains to Amsterdam, of twenty-seven-inch and twenty-four-inch width, each 9,250 meters long, and separate pipe lines in the town. This Vecht water supply, established with the purpose of superseding the Hill water supply, which could no longer deliver its water under a sufficient pressure, did not satisfy expectations.

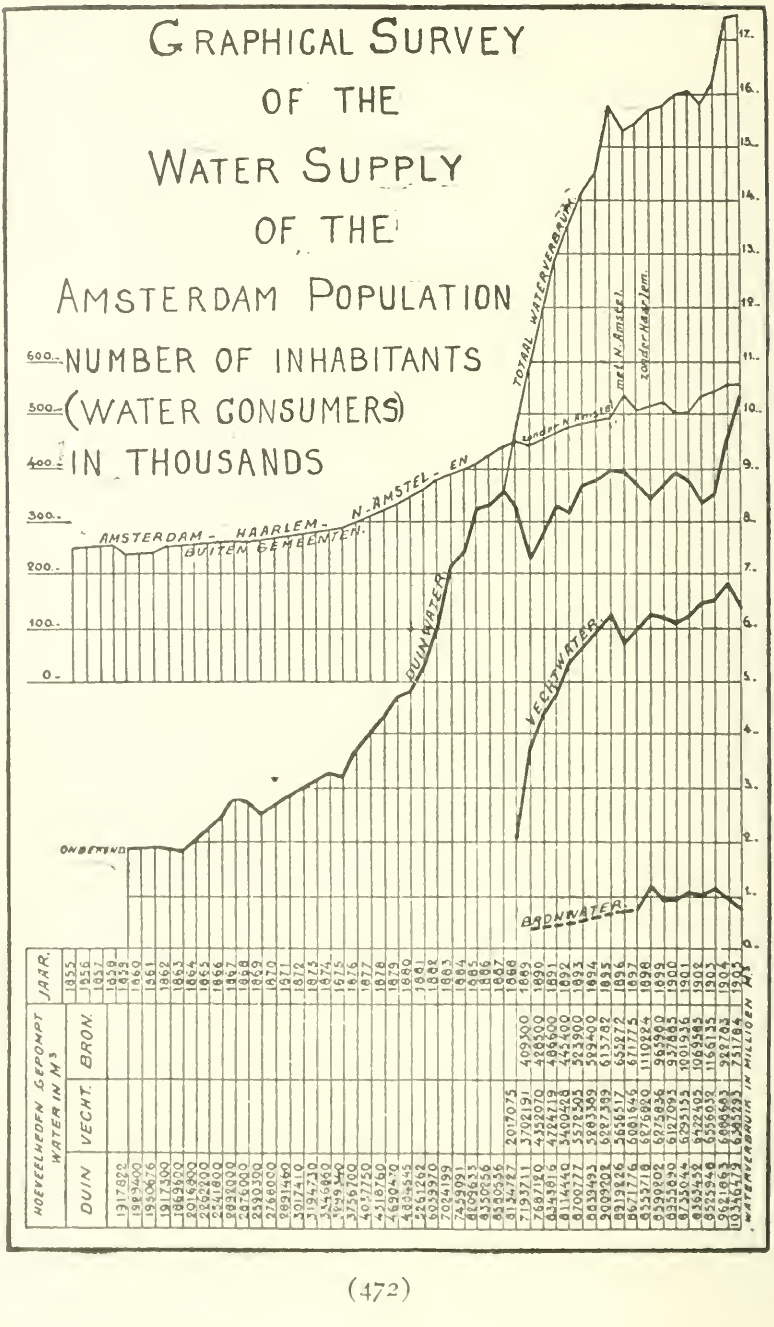
The supply of the Hill water was in a great part of the town wholly insufficient, and the agitation for municipal exploitation increased, till, after a long struggle, the town of Amsterdam took over the works of the Hill Water Company on May 1, 1896. In the meantime, by the increasing of its borders, the town came into possession of the Heathwater supply with a smaller capacity, which, since 1888, supplied the suburb Nieuwer-Amstel with heath water from the heath in the neighborhood of Hilversum.

The Heathwater supply, which provides a quarter of about 60,000 inhabitants by means of a water-tower with a reservoir of 500 cubic meter capacity, standing near the border of the town, receives the heathwater by a twelve-inch cast-iron pipe of twenty-seven kilometers length.

This water is pumped to the town from the pumping station by fifteen well pipes, from thirty-six to forty meters deep. It has no filtration. Since May 1, 1896, the town of Amsterdam has exploited accordingly three municipal water supplies, viz.:

1. The Hill Water supply, for domestic use.
2. The Heath water supply, for domestic use.
3. The Vecht water supply, for industrial and public purposes.

May 1, 1898, the supply from the dunes in behalf of the town of Haarlem was no longer continued, because this town had built waterworks for its own use. To improve the supply of Hill water in Amsterdam, after the community had come into possession of these works, great works of alteration and extension were immediately executed. In the dunes near Vogelenzang new canals were digged and the existing ones deepened, so that at the present time the Hill water is obtained from about twenty-five kilometers of open canals. Instead of the old pumping station a new one,



HOEVEELHEDEN GEPOMPT WATER IN M³ DUIN	VECHT.	BRON.	JAAR.
			1855
			1856
			1857
			1858
1917822			1859
1929400			1860
1950676			1861
1917300			1862
1869600			1863
2016800			1864
2262200			1865
2341800			1866
2892000			1867
2876000			1868
2590300			1869
2768000			1870
2891460			1871
3017410			1872
3194730			1873
3346860			1874
3299340			1875
3756700			1876
4037750			1877
4318760			1878
4690470			1879
4884545			1880
5261262			1881
6059970			1882
7024199			1883
7459091			1884
8209633			1885
8350256			1886
8580536			1887
8134727	2017075		1888
7193711	3702191	409300	1889
7687120	4352070	428500	1890
8343816	4724719	486600	1891
8114440	3400428	445400	1892
8700777	3578505	523900	1893
8839493	5283389	529400	1894
9009202	6227389	613782	1895
8919826	5656517	655272	1896
8671776	6081646	671775	1897
8555718	6276820	1110224	1898
8590202	6275836	965960	1899
8955890	6127093	937885	1900
8735044	6295155	1001936	1901
8363452	6422405	1069585	1902
8525940	6556032	1166135	1903
9621863	6888683	929703	1904
10346479	6365293	751784	1905

with two vertical triple-expansion engines, water-cellars and new filters was built; and in Amsterdam a low level reservoir of 10,000 cubic meter effective capacity, with a new pumping station at the Haarlemmerweg, which pumps the water directly into the town, was constructed. A large ring-pipe line was laid.

Charges to Consumers.—On May 15, 1900, the low-level reservoir and the pumping station at the Haarlemmerweg came into operation, and on January 1, 1901, the new pumping station near Vogelenzang. Since the extension and improvement of the network of pipes, completed, for the greatest part, in June, 1902, the Hill water can be delivered in all parts of the town with a pressure of twenty-five meters. In the town the pressure of the Heath and Vecht water amounts to from thirty-five to forty meters. The Vecht water, for public service, watering, fire-quenching, etc., is delivered cost-free; for industrial purposes, however, it is charged for by meter, and is computed at 10 à 15 cents per M_3 according to a special tariff. For domestic purposes the price of the Hill and Vecht water is computed according to the number of rooms.

See the graphical survey preceding.

SURVEY OF THE WATER DELIVERY PER MONTH AND PER DAY (1905).

Month.	Total consumption in M³.			Consumption in liters per day and per head of Hill, Vecht and Heathwater.			Average number of inhabitants.
	Hillwater.	Vechtwater.	Heathwater.	Max.	Aver.	Min.	
January	803,880	440,032	58,389	90	77	57	551,777
February	738,538	398,436	52,202	90	77	57	552,539
March	813,329	439,353	60,319	86	76½	57½	553,169
April	807,167	499,786	52,127	94	82	60	553,505
May	906,728	612,527	60,293	116	92	67½	553 559
June	941,329	626,716	63,389	118	98	71	553,509
July	993,573	686,109	70,523	121	102	76	553,623
August	943,636	655,993	67,872	114	97	71	553,987
September	899,246	569,443	65,723	103½	92	70	554,686
October	874,630	490,212	64,540	94	83	62	555,548
November	810,823	477,333	60,459	94	82	61	556,423
December	809,600	480,353	66,948	94	78	55½	557,248
Year figure 1905	10,346,479	6,385,293	751,784	121	86	55½	554,515

The number of inhabitants amounted on January 1st, 1905, 551,416.
The number of inhabitants amounted on December 31st, 1905, 557,614.

Experience with Water Meters.—In total, about 3,600 water meters are in use, nearly all in industrial establishments. As for exactness the disk meters, marked "Etoile," give the best satisfaction.

Relation of Water Supply to Public Health.—See Schedule I hereafter.

Profits.—See Schedule II hereafter.

Present Condition of the Works. Plans for Improvement.—The examination of the dunes in the last three or four years has shown that the water, suitable for drinking, is to be found there at a depth of more than 100 meters, the drawing of water takes place from those deeper layers of sand by means of 100 well-pipes of about forty meters depth.

In many respects the works will soon be at the limit of their capacity, especially for the maximum consumption in summer. When this condition is reached the extension will be executed either by enlarging the three existing water works, or by building of a wholly new water supply. These propositions have for many years been under discussion, but no decision has yet been reached.

MORTALITY.

The mortality caused by febris typhoidea at Amsterdam in the years 1854-1905 compared to the use of the Hill water supply.

Years.	Average population.	Mortality caused by Febris Typhoidea.	Number of contracts for water delivery.	On 1000 inhabitants.		Years.	Average population.	Mortality caused by Febris Typhoidea.	Number of contracts for water delivery.	On 1000 inhabitants.	
				Mortality to Typh.	Contracts.					Mortality to Typh.	Contracts.
1854	250,500	370	960	1.48	3.8	1881	332,121	109	22,168	0.33	66.8
1855	254,305	544	1,695	2.14	6.7	1882	341,124	84	23,232	0.24	67.5
1856	257,696	485	2,231	1.88	8.7	1883	355,763	74	24,093	0.21	67.7
1857	259,955	499	3,198	1.92	12.3	1884	363,993	67	24,412	0.18	67.1
1858	260,282	480	3,670	1.84	14.1	1885	369,492	42	24,936	0.11	67.5
1859	251,915	403	4,413	1.60	17.5	1886	375,505	55	25,211	0.15	67.1
1860	244,188	313	5,031	1.28	20.6	1887	384,351	54	26,196	0.14	68.2
1861	246,713	272	5,597	1.10	22.7	1888	394,720	58	27,221	0.15	69.0
1862	251,085	268	6,285	1.06	25.0	1889	403,742	49	27,899	0.12	69.1
1863	256,752	301	7,138	1.17	27.8	1890	412,800	82	28,481	0.20	69.0
1864	259,000	307	7,801	1.12	30.1	1891	422,226	49	29,146	0.12	69.0
1865	261,100	368	8,578	1.41	32.8	1892	432,493	64	29,658	0.15	68.6
1866	263,501	256	9,203	0.97	34.6	1893	442,274	69	30,368	0.16	68.7
1867	266,062	261	9,968	0.98	37.4	1894	448,418	32	30,950	0.07	69.0
1868	269,605	295	10,797	1.09	40.0	1895	453,186	40	31,644	0.09	69.8
1869	268,431	294	11,427	1.10	42.6	1896[2]	479,701 494,224	41	39,313	0.08	79.5
1870	267,575	220	12,271	0.82	45.9	1897	489,572	45	39,205	0.09	80.1
1871	271,782	251	12,959	0.92	47.7	1898	497,572	53	35,719	0.11	71.8
1872[1]	275,638	202	13,542	0.73	49.1	1899	506,281	57	36,720	0.12	72.5
1873	279,854	149	14,265	0.53	51.0	1900	515,727	64	37,634	0.12	72.8
1874	284,438	105	15,220	0.37	53.4	1901	525,[illegible]	42	38,619	0.08	73.5
1875	288,457	112	16,223	0.39	56.2	1902	534,767	43	39,885	0.08	74.6
1876	293,001	93	17,318	0.32	59.1	1903	542,671	46	40,631	0.08	74.9
1877	299,233	89	18,393	0.30	61.5	1904	548,974	46	41,610	0.08	75.8
1878	305,607	131	19,730	0.43	64.6	1905	554,514	64	42,400	0.12	76.5
1879	312,979	96	20,405	0.31	65.2						
1880	321,603	167	21,080	0.52	65.6						

[1] In this year the law on the contagious disease was applicated.

[2] The contracts of the water supplies are calculated on the population of the December 31; the mortality upon an average of the population.

Profits.

II.

FINANCES OF THE AMSTERDAM WATERWORKS.

	1897	1898	1899	1900	1901	1902	1903	1904	1905
Expenses.	Florins	Florins	Florins	Florins	Florins	Florins	Florins	Florins	Florins
Salaries	120.028,60	121.521,13	129.208,50	137.831,11	165.621,17	185.064,33	185.070,81	188.351,00	196.708,01
Costs of offices and administration	18.070,63	21.352,50	20.209,28	23.013,95	28.206,33	27,784,21	28.564,43	28.237,04	51.177,94
Maintenance of the pipe-lines, etc.	57.384,45	56.417,43	72.215,67	81.927,32	94.310,81	140.952,61	138.743,79	141.375,76	110.617,22
Maintenance of the buildings and prise-d'eau	18.952,37	13.356,64	12.839,42	27.686,23	35.756,50	54.200,78	45.158,11	58.896,38	65.391,21
Maintenance and driving engines	66.980,41	78.866,18	96.786,05	130.840,97	102.571,27	100.196,21	118.909,80	129.502,77	115.851,73
Remaining expenses	27.508,12	34.659,51	42.276,06	57.654,52	67,882,63	68.313,24	78.961,62	78.550,12	68.440,27
Total	308.933,59	326.173,40	373.685,96	458.960,11	584.438,81	585.511,40	595.417,57	624.913,98	617.186,40
Receipts.									
Water delivery	1.460.279,74	1.422.084,51	1.432.932,47	1.475.421,54	1.531.159,73	1.582.616,37	1.680.147,55	1.745.335,94	1.777.305,17
Hire of meters	26.390,01	27.172,75	27.414,67	28.234,35	29.088,75	30.363,04	33.366,92	34,208,69	34.379,41
Remaining receipts	2.747,70	12.425,84	5.551,53	7.915,10	10.074,34	10.184,43	23,293,10	26.323,45	29.356,05
Total	1.489.417,46	1.461.683,11	1.465.898,67	1.511.570,99	1.570.322,82	1.629.163,84	1.736.807,57	1.805.868,09	1.841.041,54
Net receipts	1.180.483,86	1.135.509,71	1.092.212,71	1.047.512,00	985.884,01	1.043.652,44	1.141.389,99	1.180.954,11	1.223.855,14
Of which there was used for									
Payment to the community	100.000,00	100.000,00	100.000,00	100.000,00	100.000,00	100.000,00	100.000,00	150.000,00	150.000,00
Interest	326.090.83	320.890,42	315.565,00	329.407,30	359.612,28	382.425,38	383.222,24	398.070,49	397.056,30
Amortization	198.000,00	203.000,00	208.000,00	213.000,00	233.320,00	252.155,67	275,815,28	280.815,28	285.815,28
Reserve	556,393.03	511.619,29	468.647,71	410.203,58	292.050,74	309.071,38	378.352,47	352.050.34	390.983,56

The Chemical Analyses were over 1905, upon an average (in milligram per liter).

AVERAGES OVER 1905.	Hillwater.[3]	Heathwater.	Vechtwater [3]
Klewr in (m. G. Caramel) per Liter...	4	colourless	8.8
Vaste stoffen, gedroogd by 180° C...	351.7	88.9	443.2
Gloeiverlies	19.6	6.2	40.5
Yzeroxÿde (Fe_2O_3)	0	0	0
Calciumoxÿde (CaO)	134.5	27.1	101.4
Magnesiumoxÿde (MgO)	9.8	2.4	19.7
Zwavelzuur (SO_3)	26.6	3.3	28.4
Chloor (Cl)	32.3	13.5	134.8
Kiezelzuur (SiO_2)	16.6	9.1	2.3
Ammoniak (H_3N)	0	0	0.012
Albuminoid ammoniak	0.072	0	0.117
Salpeterigzuur (N_2O_3)	0	0	0
Salpeterzuur (N_2O_5)	2.20	0.52	3.69
Zuwistofin cub c. M. per liter (O_2)...	5.85	4.09	5.51
Koolzuur (vry enhalfgebonden (CO_2)	105.	28	70
Kaliumpermanganaat ter oxÿdatie der-org. stoffen ($KMaO_4$)	5.2	0.32	11.4
Totale hardheid in Duitsche graden $\left(\frac{Ca\,O+1,4\,Mg\,O}{10}\right)$	14.82	3.04	12.90

BERLIN, GERMANY

By PROFESSOR DR. CONRAD BORNHAK, University of Berlin.

The present water works of Berlin consist of two establishments, Tegel-Charlottenburg and Müggelsee-Lichtenberg. These supply the entire city of 2,500,000 inhabitants up to a maximum demand of 100 liters per capita. This quantity of water represents a supply of three cubic meters per second, and is divided between the two works, the Tegel station supplying one-third and the Müggelsee station two-thirds. The former works contain two divisions and the latter three, each of which may be operated separately. Tegel and Müggelsee are the supply stations where the water is stored and from which it is delivered to the intermediate water stations of Charlottenburg and Müggelsee. The reservoirs for purifying the water are found in the former places and in them the large quantities pumped in night and day are held. It is there stored up during the hours when the demand is lowest and drawn off during the hours of greatest use.

The water of Berlin in recent years has been supplied entirely from ground wells. Formerly the Tegel Lake was used as a source of supply. In the 70's of the last century an appropriation of land in the vicinity of Tegel was made from which well water was drawn from twenty-three wells but it was soon found that this water was polluted. It contained a large amount of iron and certain algæ also made its use unadvisable. All the city officers made strenuous efforts to eliminate these bad qualities, but the question of supplying good well water to Berlin remained unsolved and at that time was given up as unsolvable. Later, however, renewed investigations with drilled wells in the vicinity of Müggelsee and Tegel were followed with such favorable reports that the technical possibility of supplying Berlin with good well water was put beyond doubt.

---

[3] Filtered water.

The explanation of this discovery of good water in the immediate vicinity of the wells formerly condemned is found in the fact that the earlier wells averaged only sixteen meters in depth. The deepest one was not more than twenty-five meters, while the new driven wells were sunk to at least fifty meters. With these greater depths the former presence of algæ, which had rendered the well water unfit for use, was eliminated, and the iron also disappeared. With the disappearance of iron practically all the carbonic acid gas was also eliminated. To this fact was due the elimination of the algæ which needed this substance for their nourishment. It was now felt that well water should be supplied to Berlin to the exclusion of the use of filtered surface water the well water possessing a distinct advantage over the other in its freedom from germs.

The very favorable lay of the land which acted as a natural filter for the rain water sinking through it, brought it about that the well water was entirely free from bacteria. A further advantage in favor of well water is its uniform temperature of 10° Celsius in contrast to the water from the rivers which was always too warm in summer and too cold in winter. Although the advantages and practicability of supplying the well water to Berlin were well known, the general public was not aroused to bringing about any change in the passable good service formerly rendered from the Tegel plant.

Not until other circumstances forced a change did the city transform its water supply system. The rapid growth of population of late years had forced the northern suburbs of Berlin to establish large drainage areas whose outlet was the Tegel Lake. As this was the natural means of drainage for the regions involved, the officers of the city believing that it involved no danger to the health of the community, did not feel justified in refusing the suburbs the privilege of sending their sewage into the lake, especially as these communities were not in a financial position to provide other means of disposal such as filter fields. The dangers of pollution of the Tegel Lake could have been removed by the transference of the sewage outlet to a point farther down the River Spree near Fürstenbrunn. However, this would have involved considerable expense. This remedy was not adopted, however, because the community of Reinickendorf was about to install a similar drainage system into the lake which could not be disposed of in the same way.

The royal government now placed upon the City of Berlin the duty of transferring its water supply to the use of well water exclusively as it was evident that the Tegel Lake could not permanently be kept clean as a source of supply. The beginning in exploration for new well locations was made in 1899, five deep wells and eighty-one exploring tubes were sunk in the Tegel forest. These explorations showed that the supply of ground water was sufficient to furnish the quantity formerly supplied from the lake. This could be done without lowering the level of the water to such a degree that it would interfere with forest projects or agricultural operations. This conclusion having been reached, both branches of the Tegel supply were transformed in succession, the first division for furnishing water from the new wells coming into use in 1901 and the secod section in 1903.

Meanwhile the transformation of the Müggelsee works was under way. The situation at Müggelsee was not so unfavorable as yet as at Tegel, although similar bad conditions had made their appearance and were to be feared even more in the future. The factories in the neighborhood were growing in a remarkable degree and emptied their sewage into the Spree. In addition, the floods of the spring and fall in the Spree forests carried into the water a large amount of humus which gave it a yellow color and made it unfit for use. The explorations in this neighborhood had produced even better results than at Tegel, so the city authorities decided to rebuild entirely the Müggelsee works. The modification will be completed by the end of the present year. The following table shows the development of the use of water in the City of Berlin from the beginning of the waterworks system:

YEAR.	Districts supplied with water.	Total water delivered in the city in cubic meters.	Per capita use of water per day (liters).	Total quantity of water delivered on one day in the year.			
				Greatest.		Least.	
				Cubic meters.	Date.	Cubic meters.	Date.
1857	669	2,462,836	224.00		. . .	. . . . . .	. . . . . .
1862	2,350	3,019,823	101.00	18,240	7.6	5,830	1.1
1867	5,500	9,213,951	104.00	34,353	31.8	16,068	22.4
1872	7,524	13,053,070	79.00	54,575	27.7	24,107	7 1
1876 .	9,649	17,537,030	90.00	62 468	19.8	33,677	1.1
1877	12,365	20,545,845	90.00	76,210	24.8	37,210	Feb.
1882	16,876	22,434,532	63.70	82 010	15.7	46,557	1.2
1887	19,193	30,877,369	64.87	119,215	30.7	61,606	25.12
1892 .	22,638	40,035,922	67.13	163,076	25.8	75,645	26.12
1897 . .	24,662	49,882,328	77 87	202 385	30.6	94,510	2.1
1902 .	26,525	55,142,646	79.13	218,220	4.6	104,011	25.12
1904 . .	27,806	69,861,335	84.17	251,174	16.7	109,703	26.12

The decrease in the average use of water from 224 liters to about sixty-three liters in 1882 per head per day is explained in the fact that formerly the water was supplied without being metered, after a payment of a set yearly tax; while later, with the gradual introduction of water meters, it was sold exclusively by quantity. In 1878 the water meter was permanently installed throughout the city, and the quantity used diminished with great rapidity. The table shows further that the average use is growing both in the periods of least and of greatest demand. At present water is sold at fifteen pfennige a cubic meter. Aside from this a fixed water tax of four marks is levied quarterly on every property.

Even while the project for the enlargement of the Müggelsee plant was being made the daily use could be reckoned at 100 liters, but at the present time the highest use per inhabitant per day exceeds 130 liters. When it is taken into consideration that the use of water in each city necessarily increases with the growth of the city, and that in Berlin the higher portions of the city are more and more being taken up as residence districts where the establishment of private wells is impossible, it is seen that the consumption will grow to at least 160 liters. A later estimate gives the need of Berlin when it has 2,700,000 inhabitants as 430,000 cubic meters per day. Moreover, the suburbs of Weissensee Niederschöneweide, Treptow and Stralau, with an area of about 1,000 hectares, have been taken into the district supplied with water by the city. The future need of this district may reach 50,000 cubic meters per day, so that a safe supply in the times of greatest consumption will depend upon an ability to deliver 480,000 cubic meters per day. Inasmuch as at the present time the daily delivery of the present works is 260,000 cubic meters, it is evident that the creation of other establishments is a matter of pressing necessity. Beginnings have already been made in planning these extensions.

COPENHAGEN, DENMARK

By Dr. William Scharling, Copenhagen.

The water-works of Copenhagen are municipal. They were built in 1859 and have been several times enlarged because of the growth of the city (1855, 155,000; 1906, 426,000 inhabitants). A new system, yielding daily 17,000 cubic meters, is expected to be ready for work at end of 1908; at present the average daily consumption is 102.33 liters per head.

The water-work is high pressure work, ground water, with sand filtration. The water comes from bored wells, is without germs and of extremely good quality; the establishment of these works has been of great hygienic importance to the inhabitants of the city. Other hygienic amelioration contributing, the mortality of Copenhagen has been steadily decreasing: 1865-74 an average 261 per 10,000; 1875-84, 246; 1885-89, 221; 1890-94, 214; 1895-1900, 177.

The charges to consumers are partly based upon the area of building, partly by the tap and partly by meter. Meters are compulsory only for industrial use and for water closets, but appear to be very suitable. The charges have in 1905-06 given the municipality an income of 614,000 kroner (1 kroner equals 27 cents); the expenses have been 400,000 kroner. The works give thus a good profit on the amount invested. The capital bound up in the works is 9,480,000 kroner; they give thus an interest of more than 5 per cent.

The plans of extending the work will be ready in 1908, and are to furnish a high reservoir to contain 20,000 cubic meters.

STOCKHOLM, SWEDEN

By O. Nordenstrahl, Stockholm.

December 6, 1855, it was decided to supply Stockholm with water from the lake Malaren after the plans made by Captain F. W. Leijonancker, and for that purpose an appropriation of kronor 1,150,000 was provided. In the year 1858 the work was begun, and July 1, 1861, the plant was put into operation.

This first plant consisted of two vertical-balance steam-pumps with four boilers mounted in one engine-house, and one boiler-house, one administration building, three basins for sand filtration with a combined surface of 1,574 cubic meters, one pump-well with necessary pipes; the pipe system in the city and one high-pressure reservoir of 5,100 cubic meters capacity. The capacity was 5,000 cubic meters per diem for each pump.

As the population, and with it the water consumption, has increased, the plant has been added to, until it in 1898 consisted of four pumps with an output for each of 10,000 cubic meters, twenty-two open basins for filtration with a total surface of 17,710 cubic meters, four water reservoirs of 20,400 cubic meters capacity, and a line of pipes of 181,000 meters. The inside diameter of the pipes varied from 51 to 610 millimeters.

As the demand on the water-works still continued to grow, and for various reasons was found inadvisable to add new parts to the old plant, it was finally decided to build a new station at Norsborg, some twenty kilometers southeast of Stockholm, between the lakes Malaren and Bom. This latter lake is giving an exceptionally clear and good water, as it is surrounded by woods, and on one side is skirted by a gravel ridge from which several springs send their waters to the lake. The city bought the surrounding land in order to be sole possessor of the lake. In the years 1901-04 the new plant was erected here, comprising one tunnel to lead the water from the lake to the filters, three roofed sand filters of 1,550 cubic meters surface each, one pumping-well, engine and boiler-house, two horizontal pumps, driven by two double-cylindric engines, four boilers, electric power and lighting plant, administration building, seven houses for the functionaries, etc. In addition to this, there is a ground-water plant to take up the water from the stone ridge. This comprises two wells, thirty-three and eighteen meters deep, two electric pumps, and one iron filter to take the iron out of the ground water. This part of the plant yields 3,000 cubic meters, and the combined plant 33,000 cubic meters per diem. A cast iron pipe, 102 centimeters in diameter, carries the water to a high reservoir of 18,000 cubic meters outside the city, and from this reservoir a pipe of 122 centimeters diameter conducts the water to the pipe system in the city. The supply of water available from these lakes is unlimited.

As to charges to consumers, each house owner pays for general use in the household and for each room in the house, two kronor per annum.

For other purposes the water is sold at 20-16 öre per cubic meter. The city, for the water used for its own purposes, credits the water-works with

12 öre per cubic meter. The average daily per capita consumption has been 100 liters with a maximum of 150 and a minimum of 53.4 liter.

Of water meters there were, in 1906, 2,100 in use, principally turbine meters of Siemen's & Halske's and Meinecke's construction. Another meter of French make has also been used. The experience has proved this to be the best way of distributing the water, the justest to the consumers and the only possible to prevent waste.

The public health has been directly proportional to the increasing water consumption and the improvement control of the source of supply.

The total consumption for 1906 reached 11,644,716 cubic meters. The pipe system was 238,330 meters in length, with a capacity of 26,132 cubic meters. The total value of the water-works is 16,042,759.83 kronor.

The income of the works in 1906 was 1,231,144 kronor, and the expenditure 888,872 kronor. Thus the profits for the same year netted 348,251 kronor toward payment of the debts.

The plans for improvement contemplate additions to the works at the lake Bom until they shall yield 100,000 cubic meters per diem.

UPSALA, SWEDEN

By G. Laurell, Upsala.

History of the Establishment of the Water Supply.—The Upsula water-works were started in 1875, drawing their supply of water from the gravel ridge, at the foot of which Upsula is situated. The supply is abundant and widely known for its clear and healthful qualities. As the demand on the water supply has grown, new wells have been opened, the last addition having been made in 1905. The supply will probably be sufficient for any increase in demand that may be expected.

No charge is made to private consumers for water to fill household demands. An exception is, however, made for houses heated by water, for which a small annual sum is charged. Factories, buildings in erection and stables have also to pay annually for water consumed, the buildings in erection paying for water in proportion to the number of bricks in the building, and the stables paying in proportion to number of horses. The factories pay for the quantity of water as measured by meters.

The average daily per capita consumption for the years 1904 and 1905 has been 107 liter, and for the year 1906, 105 liter. So far water meters have only been used in the case of factories as mentioned above. At present only about 100 are in use.

The maximum capacity of the pumps is 120 liter per second. The length of pipe had at the end of 1906 was 33,700 meters, and the total value of the whole plant was 608,300 kronor. As the water is mostly delivered free of charge, the income does not cover the expenditure, the balance generally amounting to about 4,000 kronor annually.

The present supply is adequate to the immediate needs and there are consequently no plans for enlargement.

MADRID, SPAIN

By Chester Lloyd Jones, Ph.D., University of Pennsylvania.

The water supply of Madrid is furnished partly by the national government and partly by the city. The water is brought to the city limits from the River Lozoya, a snow-fed stream in the Guadarrama Mountains. This source of supply was brought to the city in 1858 by the central government and gave to Madrid for the first time an adequate supply of water. Up to that date shallow-dug wells were the sole resource. Since then the rapidly increasing population and increased use of water by public fountains and in irrigation have necessitated large additions to the original plant. The population supplied has grown in the period from 1855-1904 from 200,000 inhabitants to 560.000, and the superficial area supplied has increased from 700 hectares to 2.200. The water consumption per day has increased during the same period from 2,000 to 140,000 cubic meters. In proportion to the population this means a use of water at the present time twenty-five times greater than that in 1855. The price per cubic meter has fallen from one-eighth to one-forty-sixth that charged in 1855.

The supply is more than adequate for the needs of all but the higher portions of the city. Indeed, a comparison of the amount of water used in Madrid with that consumed in other important cities shows that only in New York and Rome is a larger amount consumed per inhabitant per day.[4] The daily consumption in Madrid amounts to 250 liters per inhabitant; in Rome, 1,000; in New York, 300; in Paris, 216; in London, 159; and in Berlin, 80.

From the first the method of adjusting water rates has been open to many abuses which have only recently been remedied. The City of Madrid is granted a certain amount free for public uses within her borders, and for all that used above that amount granted free the charge is at the rate of two and one-half pesetas for a supply of one hectoliter per day for a year. The charges within the city have been settled by the municipal government. Certain charitable institutions receive the water gratis and it is also supplied to public fountains without charge, but no individuals at the present time can legally receive such concessions. The water granted for public use is largely wasted as the city uses over 40.000 cubic meters per day. This laxness of administration is due to the fact that the charges for extra water for public use beyond the free grant are not enforced. It is said that in 1906 the city used over 40,000 cubic meters, though only a little over 6,000 were granted freely. For this additional amount no charge was levied against the city. The charge to individuals has, until recently, been based upon the number of faucets in use no matter what the quantity used. Meters are now being introduced, the charge varying from .30 pesetas down to .05 pesetas per cubic meter. This is a service equaled in cheapness by but few other large European cities

The quality of the water is said to be excellent. The sources from which it is taken, far up in the mountains, are free from all bacteria and harmful chemical elements. The canal through which it is brought to Madrid, however, is uncovered, and an objectional amount of vegetable and animal matter finds its way into the water, necessitating sand filtration. Statistics showing the effect of the improved water service upon public health have not been collected, but officials claim a marked improvement in all hygienic conditions. The rapid increase in the population of the city, as noted above, it is claimed is due in large part to the excellent water supply.

---

[4] Memoria sobre el Estado de los diferentes servicios. (Canal de Isabella II, p. 158. Madrid, 1907.)

The sources from which Madrid draws her supply promise to be ample for all growth in population for many years. The amount of water which can be delivered through the present canal can be increased to 300,000 cubic meters per day, equal to 600 liters per day per inhabitant for a population of 500,000, or 300 liters per day for a city of one million inhabitants—a figure at which Madrid will not arrive for several generations. Nevertheless there are plans to increase the possible water supply, while at the same time providing means for irrigation to the surounding country. The agricultural rejuvenation of Spain by irrigation, so much talked of, promises to bring in its wake a supply of water far beyond what the population of the metropolitan district will demand for ordinary municipal needs. A new set of canals from the Guadalix River is already in process of construction and will furnish an additional resource of six million cubic meters. Plans are also being made for a larger water supply to the high parts of the city and to the low-lying suburbs.

DEPARTMENT OF SOCIAL WORK

Infant Mortality in the American Cities

Compiled by George B. Mangold, Ph.D.

A SYMPOSIUM

New York City.—George B. Mangold, Ph.D., Expert, U. S. Department of Commerce and Labor.

Philadelphia.—A. C. Abbott, M.D., Chief of Bureau of Health, Philadelphia.

St. Louis.—Thomas A. Buckland, City Chemist, St. Louis, Mo.

Baltimore.—C. Hampson Jones, M.D., Assistant Commissioner of Health, Baltimore, Md.

Buffalo.—Ernest Wende, M.D., Health Commissioner, Buffalo, N. Y.

Cincinnati.—Samuel E. Allen, M.D., Health Officer, Cincinnati, O.

Milwaukee.—G. A. Bading, M.D., Commissioner of Health, Milwaukee, Wis.

Minneapolis.—P. M. Hall, M.D., Commissioner of Health, Minneapolis, Minn.

Providence.—Charles V. Chapin, M.D., Superintendent of Health, Providence, R. I.

Rochester.—George W. Goler, M.D., Health Officer, Rochester, N. Y.

The New York Society for the Prevention of Cruelty to Children.—E. Fellows Jenkins, Secretary and Superintendent.

INFANT MORTALITY IN THE AMERICAN CITIES.

Compiled by George B. Mangold, Ph.D., Expert, U. S. Department of Commerce and Labor.

The problem of infant mortality is rapidly becoming one of increasing interest and importance. Both here and abroad new methods of dealing with the subject have been introduced, and in some cases marked success has been achieved. In order to throw additional light upon the situation letters of inquiry have been sent to leading American cities for information in regard to the conditions prevailing in each, and to the changes and reforms under contemplation. Among questions to which answers were especially desired were the following:

1. Is infant mortality increasing?
2. What children's diseases are being successfully overcome?
3. What progress has been made in the control of the milk supply?
4. Are steps being taken to educate mothers in the care of children?
5. Has the precise influence of certain factors, such as poor milk, unsanitary surroundings, neglect, mal-nutrition, etc., been worked out?
6. Are private agencies supplementing the work of the municipality, and, if so, in what way?

Reports from various cities follow. These include extracts from the letters received from the various health officials whose names are given and also their general summaries.

NEW YORK CITY

The mortality of children under one year of age in the old City of New York has steadily decreased during the last fifteen years. In 1891 the rate stood at 241.9 per 1,000, but fell to 191.7 in 1900. It has gradually declined since then and by 1906 had fallen to 167.8. The death rate for children under five has likewise decreased from 96 in 1891 to 54 in 1903. These changes are explained on the ground of "persistent sanitary supervision and preventive medical interference."

Several diseases have become increasingly subject to control. Measles, although still quite irregular in its rate of mortality has declined very largely since 1896 when quarantine was established. Scarlet fever, which was first quarantined in 1888, now causes less than one-fourth the percentage of deaths that formerly resulted. The new treatment of diphtheria and croup has had far-reaching effects. The case fatality has declined from about 40 per cent in 1892 to 10½ in 1903, while the actual rate of mortality is only one-third of that prevailing in 1894. Bacteriologic diagnosis was established in 1892, and since then cases have been more frequently reported. The use of anti-toxin since 1895 has been the most powerful cause of the declining death rates. Diarrheal diseases, confined largely to small children, have decreased 62 per cent since 1881. This is "attributable to a number of causes all operating in the direction of pure food and air, the most prominent among which are a supply of purer milk by reason of official watchfulness, the pasteurization of milk through the instrumentality of private philanthropic enterprises; the education of the mother and nurse as to the necessity of constant vigilance over the cleanliness of infants' food, especially the milk; the opening of small parks; clean streets; and the establishment of the floating hospital of St. John's Guild."

The inspection of milk is being made more rigid. Inspectors operate both within the city and among the dairies which contribute to the city's milk supply. Circulars of information are sent to mothers. The Strauss milk depots dispense good milk, and in many ways charitable societies of the city are taking a part in the solution of the problem.

PHILADELPHIA

By A. C. Abbott, M.D., Chief of Bureau of Health.

The statistics of Philadelphia show considerable variations in the infantile death rate from year to year. The rates for the years 1903-05 were lower than those of preceding years, but how much of this advantage was due to the comparatively cool summers of these two years and to the activity exercised over the question of infant feeding it would be difficult to compute. Of the diseases of infants those that exhibit the most frequent and conspicuous decrease are the diseases of the intestinal canal.

Very decided progress is being made in the quality of the milk supplied, but that progress will never be very marked or satisfactory until the department of health is authorized by the state legislature to issue licenses to all individuals who are engaged in the milk trade, giving them, at the same time, power to revoke the license if the dealer does not conduct the business in conformity with sanitary precepts. An effort was made at the last session of the state legislature, as also at that of 1905, asking for such power, but it was denied us in both cases. I do not believe any permanent progress can be made until we have it in our hands to eliminate all incompetents from a business requiring technical training, and a business handling the most perishable commodity that comes to the community.

There is a continuous effort through the public press and charitable organizations, through district doctors, visiting nurses, etc., to educate mothers in the care of infants. The difficulty in this particular kind of work lies in the fact that all mothers who need the education are so densely ignorant that it is difficult to make an impression on them, and as many of them do not understand the English language, the difficulty is not lessened. This bureau distributes every summer, tracts in several languages, instructing mothers what to do, but whether they have any effect or not, I am, unfortunately, unable to say.

The municipality receives co-operation from practically all the charitable organizations and institutions, both in the way of instructions and in the way of material help to the poor. There is still, however, an opportunity for good that has not yet been fully realized My belief is that a great deal of the money that is expended in what is called charity, is not expended wisely. My plan would be to have house-cleaning squads employed, who, under proper supervision, would go into tenements and into the slums, and not only instruct the people how to clean their houses, and the advantage of it, but who could actually pitch in and clean the houses themselves if the householders were not inclined to do it. I know of few charities that would be so far-reaching in their good effects as the one that I have just mentioned.

ST. LOUIS

By Thomas A. Buckland, City Chemist.

As a result of the enforcement of the ordinances regulating and controlling the production and sale of milk there has been a marked improvement noticed in the quality of the milk sold in the City of St. Louis. Chemical testing of milk will protect against watering, skimming, and the addition of preservative and other adulterants. It cannot, however, do very much in protection from unsanitary production and handling of milk. Dairymen and farmers of the present day are as a rule careless and indifferent, largely as a result of ignorance. There are dairies in which all the most modern sanitary precautions are observed, and St. Louis is fortunate to receive a small portion of her milk supply from such source. The quantity thus received is, however, small. The sanitary division of the health department uses its best efforts to compel sanitary conditions in the dairies located within the city limits. There is, however, a limit to the powers granted by the law to its officers in enforcing cleanliness. The most hopeful sign in the situation in this city is the existence of the above-mentioned small and gradually increasing number of sanitary dairies located in the country adjacent to St. Louis and contributing to the milk supply.

The St. Louis Pure Milk Commission has done much good work supplementing that of the city. It was organized in 1903 and follows the plan of the Strauss milk depots of New York City. Fifteen milk stations have been established, and a large quantity of modified and pasteurized milk is annually sold or distributed. In addition to the distribution of such milk for infant feeding, the commission has accomplished something towards the improvement of the general milk supply of the city; and at present there are three dairies that have all the rigid requirements of the commission and are now supplying their trade with "certified milk."

The infant mortality of the summer months between 1896 and 1904 was comparatively high, since then a decrease has occurred, part of which is undoubtedly due to the agencies working for purer milk.

BALTIMORE

By C. Hampson Jones, M.D., Assistant Commissioner of Health.

So far but fair progress has been made in controlling the milk supply. We hope in a short time that the city will make sufficient appropriations for us to supervise it at the seat of production in the country and at the points of distribution within the city. Private agencies have established milk distributing depots where milk is obtained by poor people at less than cost, the milk being properly cared for so that the bacteria count is low, and being given to the babes as soon after milking as possible. These agencies have been doing good work, and in conjunction with the work of this department will materially affect the death rate of children.

It is difficult to determine whether infant mortality has been decreasing or not. Unless the exact number of children under one is known, the percentage cannot be calculated. Again, rates vary much from summer to summer, due to atmospheric conditions that affect the development of bacteria in milk. They have been low the past summer owing to a comparatively low temperature.

BUFFALO, N. Y.

By Ernest Wende, M.D., Health Commissioner.

Infant mortality is decreasing, owing to the following factors: (1) Dissemination of rules concerning infant care and hygiene, by the department of health and sent to each householder with infants. These circulars are printed in several languages and contain condensed information and instructions and are mailed to each mother when birth of child is recorded. When contagious diseases are reported, and inspector calls and leaves a circular pertaining to the subject. (2) Reduction of indirect and direct etiological features bearing on contagious diseases. (3) General increased enlightenment in sanitation.

The principal diseases upon which preventive measures have had most bearing are cholera infantum and the various enteric maladies and the infectious diseases of early life, principally scarlet fever and diphtheria.

The milk industry is supervised from source of supply to consumer. The following are the salient points of guard, viz:

1. Inspection of dairies, particularly in regard to conditions of herds, the presence of tuberculosis or bad udders among them.

2. Their food and water supply.

3. Condition of barn, method of cleanliness, general sanitation.

4. Care and cleanliness in milking, and method.

5. Care and cleanliness of utensils, cans, bottles, etc.

6. Time and method of cooling, hours of shipment and care in transportation.

7. Possibility of contagion from presence of contagious diseases of every kind at the farm, among the employees, and every possible source.

8. Supplying the farmer with charts—sanitary rules printed in large type on cloth, to be hung in a conspicuous place in dairy, also supplying him with circulars from time to time with sanitation rules and requirements.

9. The surveillance of city dairies. Demanding a strict adherence to a sanatory standard covering all points which, if lived up to, will minimize all deleterious possibilities.

10. Surveillance of the relationship between milk dealers and contagious diseases occurring on their routes. This is done by keeping a "tell-tale register" of the same. Each contagious disease as it is reported is charged up against the milk routes on which it occurs. This is scanned every day and when it appears that more than a certain number of cases appear upon the route of any one milkman, his entire establishment, product and source of supply, is instantly investigated, and when indicated, the estab-

lishment or its source of supply or both are closed. In this way incipient epidemics of scarlet fever, typhoid fever and diphtheria have been promptly detected and checked. But a few days ago (July 2, 1907), a case of smallpox was discovered on a route, and action immediately taken before consequences ensued. This "tell-tale register" is considered most valuable.

Private agencies are not supplementing the work of this department in the sphere to which attention is invited.

CINCINNATI

By Samuel E. Allen, M.D., Health Officer.

The proportion of deaths of children under two years of age to the total mortality has decreased considerably since 1886. In that year the percentage was 32.56, while in 1906 it stood at 21.92. Strenuous efforts have been made to place the milk supply upon a proper basis. The regulations that have been made are being vigorously enforced. They cover such points as the following: Permits to milk dealers; sufficient pasturage for cows; the regulation of the feeding of distillery waste, which is allowed under certain conditions and to a certain amount; the prohibition of sales of milk above a certain temperature; rules in respect to adulterated, skimmed, impure, and condensed milk; and in 1907 a regulation was adopted requiring dairymen who sell milk in the city to furnish certificates showing that their milk cows are free from tuberculosis or other dangerous diseases.

Aside from a circular issued to mothers in regard to the care of infants in hot weather, the department of health has made no efforts along educational lines, and probably private agencies have taken no steps toward the solution of this question.

MILWAUKEE

By G. A. Bading, M.D., Commissioner of Health.

After stating that the infant mortality of Milwaukee had shown a remarkable decrease Dr. Bading continues as follows: The diseases that are being especially wiped out are the acute infectious and contagious diseases, such as smallpox, diphtheria, and scarlet fever, which have practically been wiped out altogether among infants; and diarrheal diseases, which are diminishing rapidly from year to year.

As regards the control of the milk supply in the City of Milwaukee, we have, during the last year and a half, made progress in this respect. Our milk ordinance is a very stringent one, requiring tests for the percentage of solids, such as butter fats, as well as a bacteriological test, which fixes the standard at 250,000 bacteria per cubic centimeter. The carrying out of the provisions of this ordinance has resulted in furnishing to the city of Milwaukee a very good milk supply. Besides the ordinance which is in existence at the present time, we have now pending before the common council an amendment with provisions requiring, among other things, a tuberculin test of every dairy animal from which milk is shipped to the city, fixing a bacteriological standard of cream, and demanding that milk sold in the City of Milwaukee shall be at a temperature of not more than 50° Fahrenheit.

The health department is distributing pamphlets, giving various rules and regulations as to the care of infants particularly during hot weather. This question has been agitated in the daily papers to such an extent that we are receiving numerous applications for these printed copies.

As regards the precise influence of certain factors, such as poor milk, unsanitary conditions, malnutrition, etc., on the mortality rates among infants we are unable to furnish any definite information. No doubt the stringent supervision of the milk supply has had a marked influence. The other conditions have not as yet been worked out. About six months ago we succeeded in passing through the common council a tenement house ordinance which gives us control over the tenement conditions, and we no doubt will find that improvement in that respect will also have its influence. At the present time, private agencies are endeavoring to establish one or more fresh-air pavilions at the lake front for the care of infants during the hot summer months. These pavilions have, however, not as yet been erected, but the movement has progressed to such an extent that there is no longer any doubt that we will have them.

MINNEAPOLIS

By P. M. Hall, M.D., Commissioner of Health.

Infant mortality is decreasing, and the diseases which are slowly being suppressed are the various bowel troubles, such as cholera infantum, etc.

A bacteriological and chemical examination of milk is made in order to secure a good quality, and all cows are given the tuberculin test. When a birth is registered, the department of health sends to the mother a copy of a circular containing information in regard to the proper care and food of the child. The underlying causes of infant mortality have not, however, been worked out so as to make possible a determination of the precise influence of the chief contributing factors.

With the exception of what is done by associated charities and the outing association, private agencies are not supplementing the work of the municipality.

PROVIDENCE, R. I.

By Chas. V. Chapin, M.D., Superintendent of Health.

There has probably been a slight increase in the infant mortality. According to the records the rate for infants under one year of age has increased from 122 per 1,000 births in the period 1856-60 to 158 in the period

1901-05. A part of this increase, however, is not real but only apparent, but children of both American and foreign parentage participate in the increase. There has probably been a slight decrease in tuberculosis and the ordinary infectious diseases. An increase has been noted from influenza and diarrheal diseases. The latter may be due in part to increased artificial feeding. The milk supply, however, is being improved as rapidly as it is found possible.

The education given the mother consists of a circular of instructions which is sent to the parents of each child that is born. Last year and this a committee of physicians has been furnishing milk to infants on the plan developed by Dr. Goler, of Rochester. This summer the District Nursing Association is devoting one nurse to the care of infants. So far, however, not much has been done in the way of studying the various factors determining infant mortality.

ROCHESTER, N. Y.

By George W. Goler, M.D., Health Officer.

Infant mortality is decreasing in Rochester, and the records show that the number of children under one year of age dying during the decade ending 1896 was 4,975. For the following decade 3,421 deaths are recorded. Deaths of children under five have likewise declined from 2,476 to 1,544 for the corresponding periods. The figures show what Rochester has been able to accomplish in reducing its mortality among infants. The greatest gain is that for the months of July and August during which milk stations have been in operation since 1897. After the first year four stations were required for the needs of the city. Each one is in charge of a trained nurse who advises with mothers and dispenses milk to buyers. For two years the milk was pasteurized, then in 1899 the central station was established on a farm, and instead of pasteurizing milk all of the utensils, bottles, etc., were sterilized and clean milk put out. The work is carried on at an average expenditure of $1,000 a year for a season of two months.

The success attained in Rochester is not altogether due to the work of the milk stations, but is in part attributable to systematic work covering the inspection of all the producers' stables from which milk is drawn, to monthly bacteriologic examinations of all milk used, to an attempt to secure a low temperature of milk in the summer, and to the labors of the chemist and the chief milk inspector.

Smallpox, diphtheria, scarlet fever, and especially diseases of the respiratory tract, are declining and becoming less virulent, but just how much their lessening virulence is due to the heredity received from a long line of ancestors, and how much to the improved conditions of living, I do not know. While more children live and fewer die, many of those who live are growing smaller in stature, less robust and less able to successfully cope with the work of the world. In the children who survive we see the old latent effects of diseases. The ear marks of tuberculosis, due to infection by milk, the red eye lids, enlarged glands, and various other marks of latent tubercular infection are noticeable.

Outside of the little pamphlet of instructions to mothers in respect to the care of babies, few steps are being taken to educate them upon this subject. In the Mechanics Institute a course of lectures is to be resumed this year on the hygiene of childhood similar to those begun by the writer a dozen years ago.

The municipality gets very little help from the work of private agencies. Not that private agencies are not doing a great deal, for they are, but the great difficulty with all work of this kind is the lack of co-operation. One set of people are interested in doing things for hygiene and nothing else; another set in looking after the sick; another, in furnishing milk and so on. I do not believe we can do much until we can have a kind of clearing house in which all kinds of relief work may be operated together.

NOTE.—Letters were received from several additional cities either stating that little or no work was being done along the lines indicated, or the replies were such that we have not been able to utilize them. A number of cities did not reply to our queries, and concerning them such information as we have given in respect to the foregoing cities cannot be recorded.

THE NEW YORK SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN[1]

The New York Society for the Prevention of Cruelty to Children occupies a unique position in the metropolis. It is at once a state agency and a private institution, a seeming contradiction of terms, but not so understood by those who know the causes underlying the granting of extraordinary legal powers to a private institution whose records are not public property. The action of the legislature in delegating such authority to the societies organized in New York under the Membership Corporations Laws is thoroughly approved by judges and jurists and was, indeed, held by the Court of Appeals of New York State to have been a wise public policy. The Society does a work of prevention, the extent of which is not only little known, but can probably never be fully understood by the general public. It is necessarily a quiet work, being of a more or less personal nature and requiring ceaseless attention night and day. The community at large will never know the number of rescues of children from neglect and abuse and unspeakable cruelties which are being continually made by the Society's agents in New York City alone. Annual reports and public statements can refer in but a very vague and general way to the breadth of the work and to the detail which can never be written. Almost three-quarters of a million of children have been involved in the investigations made by the Society's officers, and the welfare of each of them contributed to directly or indirectly in such a manner as to have improved their condition in some way. This

---

[1] Contributed by E. Fellows Jenkins, Secretary and Superintendent.

"some way" may mean the absolute removal from improper guardians, the commitment to institutions of such as require reformation, or placing in suitable juvenile reformatories boys who have, through their own misconduct or the influence of others, become such as to require that sort of care. It may mean the releasing on parole of a larger number than was committed for any of the causes just stated. It is worthy of note that 400 societies in forty-four states of the Union are operating under laws based on those of New York for the prevention of cruelty to children. This is quite a remarkable condition, in view of the fact that the laws of most of the states on given subjects are widely divergent. The world has watched the progress in New York, the result of appeals to the higher courts from judgments made under the statutes whose passage was secured by the Society, and has, with remarkable unanimity, adopted these same statutes in toto, excepting with slight changes to meet local conditions.

The British Parliament, in considering the application of the eminent ladies and gentlemen who applied for a Charter for the National Society for the Prevention of Cruelty to Children, London, caused inquiry to be made of the conditions in New York, and of the strength of the laws which had been in operation here for thirteen years. A royal charter was granted to the great London Society, whose magnificent organization is such that no child in Great Britian or Ireland is too far away to be visited on short notice by an inspector of the National Society and its conditions improved, if need be. In Scotland a similar institution does a similar work, and so it is throughout most of the European countries, in India, South Africa, Australia, Tasmania and South America.

This Society's great work still lies as much in the prosecution of offenders against children as in the prevention of cruelty to them. The record of criminal prosecutions instituted by the Society, the startling number of convictions, the well-filled cells in the State Prison, speak more forcefully than statistics of the result of the work of prevention which had its origin in New York City. The work is not limited to the removal of children from unfit homes. Unfit homes there are, as there aways have been, and probably will be, and it is in these places that the Society finds its great opportunity. No one but the persons concerned can ever know what it means to visit a "home" of neglect and dissipation and miserable conditions, to administer an official warning, to return and find a partial improvement and as the visits continue, to see unclean rooms become clean ones, children better clad, and drunken parents become sober because they fear the law. "Moral suasion" is a fallacy with these people until the unfit guardians become more careful in their duties, not because of any kindly word spoken, but because of the fear which they entertain. Ignorant and vicious people must be compelled to do what is right by the strong arm of the law. But once this work of compulsion is begun, once these people undergo the unpleasant experience of being visited at uncertain hours of the day and night, once they realize that others will do for them that which they have neglected to do, they wake up to the fact that theirs will be the loss. Few fail to profit by it. The Society never removes a child from any home unless the case is a hopeless one. Removal, in fact, is the last resort. But who will say that the little ones are not rescued when the Society steps in to take them from depraved and naturally unfit guardians? Who will object to a child's removal from a brothel and its transfer to proper surroundings? Who will say that little children should be permitted to be reared in scenes and homes of continual drunkenness?

BOOK DEPARTMENT

NOTES

Aimes, Hubert H. S. *A History of Slavery in Cuba.* Pp. xi, 298. New York: Putnam's Sons, 1907.

The author in this volume gives a review of slavery in Cuba from 1511 to 1868. The chief emphasis is placed upon the slave trade and the discussion treats less fully political, economic and social questions related to the subject. The material is drawn from widely divergent sources, but the Archivos de Indias and the Biblioteca Nacional have not been relied upon so extensively as seems to be indicated in the preface. The study is, however, carefully made, and is the first detailed presentation of the subject. Though the conclusions of some of the chapters are vague, the author presents a mass of facts which will be welcomed by every student.

The economic necessity of negro labor in the eighteenth century and the successive waves of public opinion, half-hearted at first, working for the suppression of servitude in the nineteenth century, are well outlined. The same is true of the attitude of England toward the trade in slaves, the mistaken policy of the home government in handling the question, and the internal problems raised in the island itself. Two distinct services are rendered. A presentation of the economic effects of slavery within the island and a discussion of its international bearings. An appendix showing the price of slaves and a bibliography conclude the book.

Andresen, N. P. *The Republic.* Pp. 282. Chicago: Charles H. Kerr & Co. 1908.

Bartlett, Dana W. *The Better City.* Pp. 248. Price, $1.50. Los Angeles: The Neuner Company, 1907.

The author has for many years been the superintendent of the Bethlehem Institutions in Los Angeles, doing general social work. In this volume Los Angeles is really the text. He describes the forces making for a better city by picturing this city as it is and as it may be. Recognizing existing evils, he is still very optimistic for the future. His discussion is sane and stimulating, and should stir many workers in all cities toward greater things. Photographs of various scenes and institutions in Los Angeles give added local color. Constant reference is made to movements elsewhere as examples to be followed. The greatest defect of the book is the author's failure to discriminate in values. All organizations seeking to do social work are put on the same plane, and there is little indication that much that is done is badly done or were better not attempted.

Barton, James L. *The Missionary and His Critics.* Second Edition. Pp. 235. Price, $1.00 net. New York: Fleming H. Revell Company, 1907.

This very excellent characterization of the missionary and his work convinces one that critical tourists, journalists, authors and foreign residents are often misleading in their information regarding foreign missions.

The author presents the testimonials of great statesmen, military officials, scientists and divines to confirm his statements that missionaries have preceded commerce, influenced government, introduced modern education, established a vast army of native Christian literary and educational workers, and revolutionized the ideas of womanhood, in all the strategic centers of the non-Christian world.

The social, economic and religious value of foreign missions in creating new civilizations is ably presented.

Bazaine, Mariscal. *La Intervencion Francesa en Mexico.* Pp. 283. Price, 75 cents. Mexico: Vda-de Ch. Bouret, 1907.

This volume of the series reproducing documents of Mexican history contains a well-selected list taken from the collection of the shifty General Bazaine, who, during the years 1863-67, backed by the French troops, was the dictator in Mexico. Almost without exception these writings are highly colored by the prejudices of their authors.

Beazley, C. R. *The Dawn of Modern Geography.* Vol. III. Pp. xvi, 638. Price, $6.50. Oxford: Clarendon Press.

In this third volume of his exhaustive history of geographical exploration and the progress of geographical science, the author covers the last and most important period. Taking up the narrative in the middle of the thirteenth century, where left by volume II (1901), the present volume includes the developments of the century and a half from the travels of the Elder Polos to the days of Prince Henry the Navigator. Between these two dates (1260 to 1420) are crowded the major part of the events the influence of which continued to be felt far into the modern era: the extraordinary series of efforts to develop the first real world intercourse largely by overland routes, followed by the beginnings of ocean commerce resulting from the discovery of the magnet, perfection of the compass and true maps.

In the period of overland trade and travel the author traces the advances made by the Polos and their successors, missionaries, adventurers, traders and pilgrims. Among these, of course, the adventures of the Polos must always hold the most interest. These narratives, however, assume different aspects under the critical analysis to which the author subjects them in arriving at their true worth as contributions to geography.

The maritime period includes only the very beginnings of actual voyages, hence its discussion occupies a minor place in the volume, along with the state of geographical theory up to 1420.

Three appendices, criticizing the literature of the subject and an exhaustive index, prepared and arranged with exceptional accuracy, add greatly to the value and utility of the volume as a reference work.

With the two preceding volumes, this book makes readily available much material heretofore widely scattered or entirely unobtainable. The author deserves great credit for such patient preparation of a standard and permanently authoritative treatise on the early history of geographical exploration.

Bigelow, J. *The Panama Canal and the Daughters of Danaus.* Pp. 47. Price, 50 cents. New York: Baker & Taylor Co., 1908.

Bishop, A. L. *The State Works of Pennsylvania.* Pp. 297. New Haven, Conn.: Yale University. 1907.

Bogart, E. L. *Eonomic History of the United States.* Pp. xv, 522. Price, $1.75. New York: Longmans, Green & Co., 1907.

In reading the recent book by Professor E. L. Bogart, of Princeton University, one should bear in mind both the immense scope of the subject with which he deals and the purpose of the work. It is an "Economic History of the United States," and it is written for "high-school as well as college students." The scope necessarily involves a large number of economic subjects,—foreign and domestic commerce, westward migration, transportation, shipping, currency and banking, agriculture, manufacturing, mining, land, labor unions, industrial combinations and a score of others, each one of which constitutes a specialized field to which an entire volume might have been devoted. Professor Bogart has endeavored to select the chief events in the economic development of the United States, and to group them so as to constitute a continuous story. Both the scope of his work, and the desire to make it useful to the high-school student, bar all events which the author considered unessential.

Various other economic histories partially cover the same field, but most of them are either old or are confined to a smaller group of events. None answer the purpose aimed at by Professor Bogart.

The method pursued is to avoid the purely chronological by subdivision into concrete economic subjects, and yet to arrange events as much as possible according to periods of time. The book contains four parts: (1) Colonial Development, (2) The Struggle for Commercial and Economic Independence (1763 to 1808), (3) The Industrial Revolution and the Westward Movement (1808 to 1860), and (4) Economic Integration and Industrial Organization (1860 to 1906). Each of the thirty chapters, into which the economic history of the nation is subdivided, treats of a definite subject and is limited to a definite period of time.

To the student specializing in any particular branch of economic history, the book is of less value than many others. Its value lies in that it presents, in a connected form, the chief events which constituted the economic development of the United States "from the simple, isolated agricultural communities of the colonies to the complex industrial and commercial society of to-day."

Brown, S. *Alpine Flora of the Canadian Rocky Mountains.* Illustrated by Mrs. Charles Schäffer. Pp. xxxix, 353. Price, $3.00. New York: G. P. Putnam's Sons, 1907.

An increasing number of persons annually visit the Canadian Rockies during the summer months. Every student of that charming and instructive section of country will wish to take with him the little book on the "Alpine Flora of the Canadian Rocky Mountains." Mr. Brown has given a concise, scientific and not over technical description of each important plant, and the volume is admirably illustrated by ninety-eight photographs and thirty-one reproductions of water-color drawings. Mrs. Schäffer has shown exceptional skill in drawing and in reproduction of color.

Browne, Haji A. *Bonaparte in Egypt and the Egyptians of To-day.* Pp. 410. Price, $3.00. New York: Charles Scribner's Sons, Importers, 1907.

The history of Egypt since 1798 offers an attractive field for investigation but one that has been most inadequately treated in the present volume. Since the author, to begin with, naïvely tells us that as a boy at school he found history "the dullest of dull tasks," and objects to histories, as they are written, we are scarcely surprised to find a total absence of reference to authorities or source material. Again, since we find that the purpose of the author is polemical rather than historical—to promote Pan-Islamism and to fight the various windmills that one finds on the wide horizon of nineteenth century Egypt, we cannot wonder at the lack of perspective that makes the Fashoda incident one of the six great events of 7,000 years of Egyptian history, yet fails to have the Suez Canal in the index, and so far as the present writer has been able to discover, in the text. In fact there is a distinct lack of clarity of any kind in the book; words are piled upon words with dizzying effect, evidently to the writer as well as the reader—as, for instance, when he tells us the Egyptians of to-day enjoy a "condition of social and political freedom not exceeded in any country of the world," then, four pages further, that they "have no representative government nor direct power." Indeed, this most seriously-minded volume becomes almost comic sometimes, as when the English Government of Pitt's day is denounced as one of the most brutal and brutalizing ever known, and infinitely worse than any that Egypt has ever had, and he who doubts the justice of this judgment is referred to Dickens' Barnaby Rudge. This is indeed a book that can hardly be taken seriously by anyone but its author; as a whole, the work is worthless to the scholar, and, for the most part, wearying to the general reader.

Bullock, C. J. *Selected Readings in Economics.* Pp. viii, 705. Boston: Ginn and Company, 1907.

Under the title, "Selected Readings in Economics," the editor has collected a wealth of economic material, historical, descriptive and theoretical. The volume is a compilation of treatises, each of which deals with a definite subject of general economic interest written by a specialist in the field. Some suggestive chapters are "American Agriculture," "The Manufacturing Industry of the United States," "Organization of Exchange," "International Trade," "Distribution of Wealth," "Socialism," etc. Among the noted contributors to the work are such authorities in their respective fields as Adam Smith, Bastiat, Jevons, James Wilson, Taussig, Andrew D. White, and the editor, C. J. Bullock.

As is stated in the preface, the "volume aims to supply the collateral reading needed for a general course of study in economics." The editor is to be congratulated on his excellent choice of subjects as well as of authorities. One feels in reading each of the various chapters that he has before him the last thing that has been said on the particular subject under discussion. Such a book cannot fail to fill an important place in the thorough presentation of a course in economics.

Butler, Nicholas Murray. *True and False Democracy.* Pp. vii, 111. Price, $1.00. New York: Macmillan Company, 1907.

The three addresses collected here under the title of "True and False Democracy" have a thread of common thought running through them, so that the book is, after all, a unit.

The problem of present democracy is to prevent exploitation and oppression of men. To do this it must develop a clear definition of public property. When this is done, government may well regulate public property, the individual control private property, and quasi-public undertakings be jointly cared for. To express the people's will, administration should be efficient; for a people is as truly represented by an efficient administration as by a legislature popularly elected. True democracy respects law and reverences authority. Socialism does not offer us a true democracy.

Calvert, T. H. *Regulation of Commerce under the Federal Constitution.* Pp. xiv, 380. Price, $3.00. Newport, N. Y.: Ed. Thompson Co., 1907.

The current discussion of the powers of the federal government and the states is illustrated by Mr. Calvert's work on the "Regulation of Commerce under the Federal Constitution." The book is a systematic text-book treatise beginning with an analysis of constitutional provisions, followed by a discussion of the general power of the United States and of the states. In part two the subjects of regulation are considered, attention being given to manufacturing and transportation companies and to highways of trade. Part three deals with state taxation as affecting commerce.

Campbell, R. J. *Christianity and the Social Order.* Pp. xiv, 284. Price, $1.50. New York: The Macmillan Co., 1907.

The author attempts in this volume "to show the correspondence between the principles of Christianity and those of modern Socialism—Socialism in the best sense of the word."

In this work the existence of churches is justified by their realization of the Kingdom of God, which is interpreted as "the reconstruction of society on a basis of mutual helpfulness." Primitive Christianity in its practical aims is considered identical with modern Socialism. Socialism is regarded as "the practical expression of Christian ethics and the evangel of Jesus."

In accord with these interpretations, the author very ably discusses the relation of the Churches to the masses, the Kingdom of God in primitive and present-day Christianity, the common objective of Christianity and Socialism, the socialization of natural resources and industry, and the socialized state.

Colson, C. *Cours d'Economique Politique.* Vol. VI. Pp. 528. Price, 6 fr. Paris: Gauthier-Villars, 1907.

Reserved for later notice.

Craig, Neville B. *Recollections of an Ill-Fated Expedition.* Pp. 479. Price, $4.00. Philadelphia: J. B. Lippincott Co., 1907.

Just thirty years ago contracts were signed by the old firm of P. & T. Collins, railroad contractors, of Philadelphia, binding them to build the Madeira and Mamoré Railroad which was to open Bolivia to the world's commerce. It is the history and vicissitudes of this enterprise which is now for the first time given to the public in an authentic and highly entertaining form. The book will hold much interest for Philadelphia in particular, since the undertaking was so largely in the hands of its citizens. For the general public the book is especially timely because of the recent treaty concluded between Brazil and Bolivia, whereby the latter is bound to construct the road.

Bolivia is a nation of vast resources, both in mineral wealth and in agricultural possibilities, the development of which has always been hampered by the inaccessibility of the country. It is upwards of 2,000 miles by river to the mouth of the Amazon, some 200 miles of this distance being unnavigable, except for canoes. To overcome this difficulty in communication by the construction of a railroad from San Antonio, Brazil, to Guajará-merim, Bolivia, and give to the United States the tremendous advantage of controlling the vast commerce of the region, were the dreams of the promoters under the leadership of Colonel George Earl Church. The records of heroic attempts made make one of the most interesting of all the tales told of American pluck, perseverance and resourcefulness. Aside from the general interest in the narrative itself, the chief item of present significance is probably found in the struggle against the tropical climate. The book certainly furnishes an object lesson in the probable outcome of the tropical ventures undertaken without sufficient support and necessary precautions.

The single false note in the book appears in a rather pointless digression to attack the policy of the Spanish-American War and to belittle the deeds and merits of the army men. Mr. Craig adds nothing to his case by an invective against the late war, and the army in general, which sounds much like the venting of a personal grievance. The book is decidedly worth reading, giving a chapter of the past unfamiliar to the general public to-day, and recording one of the few failures of American enterprises. A half dozen excellent maps and diagrams explain the geography of the region. The participants in the ill-fated enterprise are to be congratulated in having such an able historian from among their own number.

Crane, R. T. *The State in Constitutional and International Law.* Pp. 78. Baltimore: Johns Hopkins Press, 1907.

Davis, Richard Harding. *The Congo and the Coasts of Africa.* Pp. xi, 220. Price, $1.50 New York: Scribner's Sons, 1907.

The reader who wishes to be entertained will find this book one hard to lay down. He who reads to get information on the subjects covered by the title will be greatly disappointed. One of the objects of the author's trip to Africa was to investigate the atrocities in the Congo, and over half the book is spent in declamation against Leopold's rule. But Mr. Davis admits he saw none of the cruelties about which he writes. He went up the Kasai River to visit the rubber plantations, but finding they were four days' journey from the end of the steamboat line he returned without seeing them.

Repeatedly the language used is little short of invective. The volume is full of flat contradictions. After detailing the enormous profits reaped by the king we are assured that "were the natives not sweated so severely he . . . would be a bankrupt." Mahogany is shipped as squared timber, but the pictures of the loading into the ships all show the logs as unhewn. Instances similar to these could be multiplied indefinitely.

Densmore, Emmet. *Sex Equality.* Pp. xx, 390. Price, $1.50. New York: Funk & Wagnalls Company, 1907.

"The basic idea of this book is the fundamental and ultimate equality of the human ego, whether embodied in the one or the other sex; and the aim of these pages is to explain the nature of this equality and to promote its practical realization." The author seeks to show that practically all the differences between the sexes are of man's creation and are not necessary. In so doing he reviews the biological evidence and discusses at length the various writers upon the proper sphere of woman. This is perhaps the most valuable part of the book. He believes that woman should enter freely all works of life; that her physique should be the equal of man; that the sexes should be educated together. Whether all of his conclusions are sound or not; whether, indeed, there is really any woman problem, and hence any solution may be questioned. However, we have here a sane and serious discussion of many problems affecting woman which deserves attention. To illustrate his statements many portraits of famous women are reproduced.

Dick, Stewart. *The Heart of Spain.* Pp. 155. Price, $1.25. Philadelphia: G. W. Jacobs & Co., 1907.

This is a description of a Spanish town by an artist who has the power of painting with words as well as with the brush. The "Heart of Spain," to the author, is the City of Toledo, and the graphic way in which the grim old capital is shown to epitomize the life history of the peninsula justifies the choice of words. The book is avowedly a series of personal impressions, not a guide book, yet one could use it for the latter purpose and get a much better insight into the spirit of the place than by seeking the list of double-starred attractions usually brought to the attention of the tourist.

Fastrez, A. *Ce que l'Armée peut être pour la Nation.* Pp. 294. Paris: Chevalier & Rivière, 1907.

Fisher, Irving. *The Rate of Interest.* Pp. xxii, 442. Price, $3.00. New York: Macmillan Company, 1907.

This is a notable work. The main body of the discussion lends itself to a three-fold grouping. The first three chapters criticise briefly some previous theories of interest. In a fourth chapter the author analyzes Böhm-Bawerk's constructive work, finding himself in thorough accord with that author's fundamental proposition, but the claim is made that Böhm-Bawerk commits a serious error in claiming a "technical superiority of present over future goods." Professor Fisher claims that the difference is referable to the discount principle when that principle is properly interpreted. In Chapters VI to XI, the author presents his own theory, which is, in short, the discount principle of Böhm-Bawerk purged by the author and worked out in relation to rather novel concepts of both capital and income. His capital concept embraces the entire stock of wealth (including man!) existing at an instant of time, while he conceives income to consist of the services that flow from this stock of wealth through a period of time. Chapters V, and XII to XVII show how changes in the price of the monetary standard affect the rate of interest, and discuss briefly the relation of the interest rate to the distributive problem in general. A seven-page glossary and mathematical appendices covering 190 pages and adding, the author says, "something not expressible, or at any rate only imperfectly expressible, in ordinary language," complete the book.

However, Professor Fisher has made an enduring contribution to the progress of economic thought in emphasizing the peculiar psychical relation which the value of income sustains, through the principle of discount, to the value of capital. On the other hand, it is quite likely that his concept of capital and his concept of income will not prove to be important aids to the understanding of this relation, while his general view of the problem of distribution, as stated in the few brief paragraphs devoted to that subject, will hardly commend itself to most scientists working in the same field. Again, the author renders an important service in selecting Böhm-Bawerk's idea of "the technical superiority of present over future goods" as perhaps the most unsatisfactory part of that writer's theory of interest. However, Professor Fisher has by no means given Böhm-Bawerk's error the proper correction, and as between Böhm-Bawerk's error and Professor Fisher's correction of the error the former is nearer the truth. Finally, in his discussion of appreciation and interest the author again makes, as he did in 1896, a splendid contribution to clear thinking on a subject which befuddles many minds. Professor Fisher's volume should certainly be in the hands of every serious student of economic theory, for it will stimulate even where it fails to convince.

Garcia, G. *El clero de Mexico durante la dominacion Española.* Pp. 269. Mexico: Ch. Bouret, 1907.

Goddard, P. E. *The Phonology of the Hupa Language* Part I. Pp. 20. Price 35 cents. Berkeley: University of California Press, 1907.

Griffith, Elmer C. *The Rise and Development of the Gerrymander.* Pp. 124. Price, $1.25. Chicago: Scott, Foresman & Co., 1907.

This doctor's thesis is a painstaking investigation of the part played in American politics by the gerrymander up to 1840. Many of our most careful historians have written of the gerrymander in the belief that it first appeared in the election of 1812, in Massachusetts. Mr. Griffith shows that it is nearly as old as the practice in America of popular election by districts. The first known appearance of the practice is found in Pennsylvania as the result of the formation of assembly districts in 1705. Curiously enough the unequal political division then made depended upon a provision of Penn's charter of 1701, the original object of which was to give justice to the country districts by preventing their domination by Philadelphia.

Sixteen instances of gerrymanders are discovered before 1812. The reputed gerrymander of Virginia in 1789 is discussed at length. The author concludes that the charge made against Patrick Henry that he thus tried to defeat Madison's candidacy for Congress is unsubstantiated.

The famous Massachusetts gerrymander only brought into public attention a practice already familiar to the politicians. The subsequent gerrymanders in various states and the attempts made in state constitutions to eliminate the practice are reviewed in detail. The author has made diligent inquiries in the source material and has supplemented this by liberal use of the monographic work of other students in related fields.

Gutzeit, P. *Die Bodenreform.* Pp. 142. Price 3 m. Leipsic: Duncker & Humblot, 1907.

Hale, Albert. *The South Americans.* Pp. 361. Price, $2.50. Indianapolis: Bobbs-Merrill Company, 1907.

Mr. Hale's book is interesting. A long experience in South America has allowed him to make many acute observations on South American life and tendencies. He will give the average reader a better appreciation of the south continent and the peoples, but with all this there is still much to be desired. There is no unity of treatment. The first chapters, in general character and in their detail suggest too much the red-bound guide-book. The later ones have too much of the history of battles and presidents, and throughout the book one is constantly impressed with the fact that the author writes so much from the point of view of the interested observer that the real life of the country is presented only in occasional glimpses. Repetitions are frequent, and the ever-recurring comparisons between South Americans and ourselves are often trite. The difficulty of writing a book covering so large a field, even from a single viewpoint, does not prevent the author from including much negligible detail. It is a book to entertain rather than to study. There are numerous excellent reproductions of photographs of typical South American scenes.

Hall, H. M. *Compositae of Southern California.* Pp. 302. Price, $3.00. Berkeley: University of California Press, 1907.

Hanna, H. S. *A Financial History of Maryland (1789-1848).* Pp. 131. Baltimore: Johns Hopkins Press, 1907.

Herbertson, A. J. and F. D. *The Oxford Geographies.* Vol. III. Pp. 363. Price 2 *s.* 6 *d.* Oxford: The Clarendon Press. 1907.

Hernandez, A. M. *Politica Sociológica Hispano Americana.* Pp. 57. Caracas, Venezuela: Tipografia Americana, 1907.

Higginson, Thomas Wentworth. *Life and Times of Stephen Higginson.* Pp. 306. Price, $2.00. Boston: Houghton, Mifflin & Co., 1907.

Stephen Higginson, the subject of this memoir by his grandson, was a prominent and influential Boston merchant during the formative period of the American Republic. Born in 1743, married and in business for himself at the age of twenty-one, he lived until 1828, and during the most exciting part of this long period was active in local and continental politics. He was one of the American merchants examined before the House of Commons in 1774 on the subject of American fisheries, a member of the Continental Congress from Massachusetts in 1783, one of the principal actors in the successful suppression of Shays' Rebellion, and probably the first person to suggest that the Constitution of 1787 should go into effect when ratified by nine states. His aptitude for public affairs made him one of the leaders of the Massachusetts Federalists and an active member of the famous "Essex Junto." His assistance in the organization of the American navy was considerable. The author of the memoir rightly concludes that these reasons are sufficient to justify the appearance of a life of Stephen Higginson.

The principal source materials used by the author were the letters of Higginson, a collection of which was printed in the annual report of the American Historical Association for 1896. These are quoted so constantly and fully that the volume turns out to be little more than the public correspondence of Higginson rather than a well-digested and well-written memoir. The comments and explanations of the author are usually illuminating, though occasionally inaccurate as, for example, when it is stated that Higginson was "the first to organize and equip the American Navy under Jefferson's administration;" the navy was organized, and Higginson's work in connection with it done, prior to Jefferson's administration.

Hrdlicka, A. *Contribution to the Physical Anthropology of California.* Pp. 16. Price, 75 cents. Berkeley: University of California Press.

Hrdlicka, A. *Skeleton Remains in North America.* Pp. 113. Washington: Government Printing Office, 1907.

Hulbert, A. B. *The Ohio River: A Course of Empire.* Pp. xiv, 378. Price, $3.50. New York: Putnam's Sons, 1906.

Professor Hulbert has added another volume to his many popular works on American highways. This volume on the Ohio River is partly an historical work and partly a story of adventure. Its purpose is undoubtedly to strengthen the enthusiasm of the people of the Ohio Valley for the noble river and for the magnificent country drained by that great stream. The volume will appeal most strongly to the antiquarian and to those who have a personal and local interest in the region described.

Huntington, E. *The Pulse of Asia.* Pp. xxi, 415. Price, $3.50. Boston: Houghton, Mifflin & Co., 1907

Reserved for later notice.

Jacquart, Camille. *Statistique et Science Sociale.* Pp. 120. Brussels: Desclée, de Brouwer & Cie., 1907.

This little treatise is a brief discussion of the subjects of theoretical statistics. It comprises four chapters devoted respectively to administrative statistics, statistics as a science, method, and difficulties in the interpretation of statistical data. The chief questions considered by the author are: what importance can we attach to statistics and to what extent can conclusions be drawn from them. He points out some of their definite limitations, the role which they can play, and does not hesitate to condemn defects in method regardless of the support they may have received. The value of the subject as an aid to the study of social science is maintained.

Kenny, C. H. *Outlines of Criminal Law.* (Revised and adapted for American scholars by James H. Webb.) Pp. xxi, 404. Price, $3.00. New York: The Macmillan Company, 1907.

The editor has taken a well-known English text and prepared it for use in America by introducing citations to American cases with such other changes as our different legal system makes necessary. Law students and all interested in criminology will find the book of great value, even if it does no more than reveal the hopelessly inchoate condition of all our penal legislation.

Knight, E. F. *Oversea Britain.* Pp. 324. Price, $2.00. New York: E. P. Dutton & Co., 1907.

This is a careful description of the British colonies in the Mediterranean region, Africa and America, to be followed by a volume on the possessions in Asia and Oceania. The author has adopted a semi-encyclopedic manner of discussion. Each colony is treated in its history, resources, population and general position in the politics of the empire. National bias is avoided and the maps and statistics offered are clear and up to date. Wide travel in the countries discussed has been used to the best advantage to make the book a record of observation as well as a compendium of facts. The book is a valuable contribution to the literature on British world politics.

Knight, W. (Ed.) *Memorials of Thomas Davidson.* Pp. 242. Price, $1.25. Boston: Ginn & Co., 1907.

Kroeber, A. L. *Indian Myths of South Central California.* Pp. 84. Price, 75 cents. Berkeley: University of California Press, 1907.

Lea, H. C. *The Inquisition in the Spanish Dependencies.* Pp. xvi, 564. Price, $2.50. New York: Macmillan Co., 1908.

Reserved for later notice.

Lemberger, H. *Die Wiener Wäsche-Industrie.* Pp. 234. Price 5 m. Leipsic: F. Deuticke, 1907.

Liefmann, R. *Ertrag und Einkommen auf der Grundage einer Rein subjektiven Wertlehre.* Pp. 72. Jena: G. Fischer, 1907.

Marx, K., and **Engels, F.** *Manifests of the Communist Party.* Pp. 65. Chicago: Charles H. Kerr & Co., 1908.

McKenzie, F. A. *The Unveiled East.* Pp. viii, 347. Price, $3.50. New York: E. P. Dutton & Co., 1907.

Reserved for later notice.

Miller, E. I. *The Legislature of the Province of Virginia.* Pp. 182. Price, $1.50. New York: Columbia University Press, 1907.

Morris, Charles. *Home Life in all Lands.* Pp. 316. Price $1.00. Philadelphia: J. B. Lippincott Co., 1907.

The teaching of geography to the young student, even at the present time, is all too often confined to the time-worn, senseless topics of boundaries, cities, products and animals of the various countries of the world. In one of the most pretentious of recent school geographies where it is declared "the central thought is man," man receives the least attention of all. This present little volume gives in a connected story much of the human side which is either omitted or buried in the usual text. As a supplementary reader it is admirably adapted to the young student, giving a view of geography which is very much alive. The plan of dividing the discussion into chapters on food, dress, homes or habitations, occupations, etc., even though it should add nothing to what the average geography tells under the head of separate countries, must mean a more ready grasp of the subject by young minds.

Munro, D. C., and Sellery, G. C. (Editors). *Medieval Civilization.* Pp. x, 594. Price, $2.00. New York: The Century Company, 1907.

This is the second edition of a book which has proved itself very useful to both students and teachers of medieval history. It consists of free translations into English of select passages from standard French, German and Italian authors. The majority of the selections illustrate phases of medieval culture.

The book is designed to help solve two pedagogical difficulties. In the first place it enables students who cannot read foreign languages to get at some of the results of continental European scholarship. Secondly, it enables large classes in history to do collateral reading without obliging libraries to duplicate numerous expensive books.

The enlargement in this new edition consists of the addition of some 200 pages of selections which illustrate especially the intellectual life of the twelfth and thirteenth centuries. The rest of the book is unchanged.

Peary, R. E. *Nearest the Pole.* Pp. xx, 411. Price, $4.80. New York: Doubleday, Page & Co., 1907.

Commander Peary, upon the return from his Arctic expedition in 1906, prepared an excellent account of the attempt he made in 1904-05-06 to reach the Pole. The story of how he attained a point farther north than had been previously reached by any of the many intrepid explorers of the North is told in his forceful narrative style. The book will appeal strongly not only to students of geography, but to all those for whom heroic endeavor has a fascination.

Plechanoff, G. *Anarchism and Socialism.* Pp. 148. Chicago: Charles H. Kerr & Co., 1908.

Pratt, E. A. *Organization of Agriculture.* Pp. 402. Price, $1.50. New York: E. P. Dutton & Co.

In twenty-four chapters, the author treats the recent development and present status of organization in agriculture, in as many separate countries. In these old-world countries agricultural combination has never been the result of extraordinary prosperity; on the other hand, it has been resorted to as the last hope of the peasants. The invasion of old-world markets by new-world products was the whip that, in general, drove the farmers to co-operation. Paramount among the co-operative societies that have succeeded and resulted in good are: co-operative credit systems and rural banks; co-operative buying syndicates; and sale associations. Agricultural education is largely in the hands of co-operative societies in many countries. Especial attention is given to the lot of the British farmer, and a chapter is devoted to discussing the relation of railroads to farmers.

Richmond, Mary E. *The Good Neighbor in the Modern City.* Pp. 152. Price, 60 cents. Philadelphia: J. B. Lippincott Co., 1907.

Rollins, M. *Money and Investments.* Pp. xxxvi, 436. Price, $2.00. Boston: Dana, Estes & Co., 1907.

Mr. Rollins' book on "Money and Investments" is a brief compendium of information needed by investors and students of finance. The information is presented in a dictionary and cyclopædic form. The book is accordingly intended solely for reference. The general reader, however, will find it well worth while to study the five brief chapters in the "foreword," in which the author discusses investment, speculation, and banks, and concisely presents data on other important topics.

Root, Elihu. *The Citizen's Part in Government.* Pp. 123. Price, $1.00. New York: Chas. Scribner's Sons, 1907.

Four Yale lectures on the "Responsibilities of Citizenship" are gathered here: (1) The Task Inherited or Assumed by Members of the Governing Body in a Democracy,—which is to see that the organization which controls the circumstances under which men live, in cities and states, shall be well run. (2) The Function of Political Parties as Agencies of the Governing Body,—to bring forward and work out political questions. (3) The duties of the Citizen as a Member of a Political Party,—to make the party what it ought to be, and to work with other members of the party to choose the best leaders. (4) The Grounds for Encouragement,—the growth of the Civil Service systems; less political corruption than formerly; the development of a sense of public responsibility shown in increased hospital facilities, asylums for the insane, etc.; the prohibition of lotteries; the prevention of railroad discriminations. "Thirty or forty years ago . . . the things done by corporate managers were so much worse that the Chicago and Alton affair would not have received any notice at all." Election reform, the growth of institutions of education, the agitation for a more equitable division of wealth—all mark the progress made in recent years, along political and educational lines.

Roquenant, A. *Patrons et Ouvriers.* Pp. 181. Price, 2 fr. Paris: Victor Lecoffre, 1907.

This book contains a discussion of the relations between employer and employee in France. It represents the unfavorable conditions under which the workingman of to-day lives, discusses the strike, apprentice, conditions of woman labor, use of intoxicants, and emphasizes the moral responsibility resting upon both parties in the industrial strife. Much of the value of the book depends upon the importance which it attaches to moral standards in economic life.

Salmond, J. W. *Jurisprudence.* Second edition. Pp. xv, 518. London: Stevens and Haynes, 1907.

This excellent work of an Australian jurist has already won itself a place in the literature dealing with the theory of the law. It aims to outline the general theory of law, the framework upon which all systems of law must be built. Such books are valuable not only to the student who wishes a foundation upon which to build the structure of concrete legal principles, but also to every practitioner who desires to see more clearly the organic unity which runs—or should run—through the national systems of law.

The discussion is always clear, and with a few exceptions, for example, the argument on Retributive Punishment (p. 80), convincing. At the end of each chapter is given a good selection of references on the subjects discussed. The present edition eliminates portions of the earlier one dealing with the practical application of law rather than its theoretical basis, and adds an interesting chapter to the much controverted subjects of the nature of the law of nations and of the law of nature. The author makes no definite contribution to either discussion, his object being to interpret both theories. By inference, it may be seen he leans toward the views of Sir Henry Maine.

Schatz, A. *L'Individualisme.* Pp. 590. Price 5 fr. Paris: A. Colin, 1907.

Scott, James T. *The Sexual Instinct.* Second edition. Pp. 465. Price, $2.00. New York: E. B. Treat & Co., 1907.

The first edition was published some ten years ago. In this edition, the chapter on "Perversions" has been dropped and two chapters added. The balance of the text is practically unchanged, and little new evidence is included. A wide range of subjects is included. The discussion is fair, and extreme positions are generally avoided. The latter half of the book, in which special attention is paid to the venereal diseases and their effects, is much better than the earlier sections. These first chapters, devoted to the personal and social results of immorality, are rambling, contain many repetitions and are at times preachy. They could be rewritten to advantage. The latter part often goes into so much of anatomical detail that the ordinary reader would scarcely grasp the argument. It is a book for the adult rather than the youth.

Shambaugh, B. F. (Ed.) *Proceedings of the Fiftieth Anniversary of the Constitution of Iowa.* Pp. 454. Iowa City: State Historical Society, 1907.

Shufeldt, R. W. *The Negro: A Menace to American Civilization.* Pp. 281. Price, $1.50. Boston: R. G. Badger, 1907.

It is discouraging to find a retired major of the medical service of the United States Army, claiming to write from a scientific standpoint, but violating every canon of scientific method. Major Shufeldt evidently has a bad attack of negrophobia. In his book he rants from cover to cover. His favorite comparison is to liken the negro to a skunk. Purporting to be an anthropologist he speaks of the negro as essentially without morals. (Sic!). Hence he argues attempts to improve them are idle. The only thing to do is to ship them, one and all, out of the country. Unfortunately, this the author thinks will not be done, but if it is not, then amalgamation will ultimately result, and America will go down in ruin. To this end the author firmly believes we are destined in spite of his efforts to save us. The illustrations fit the text. The frontispiece, a negro's skull; frontal and lateral views of nude negroes (photos by the author); and some eight or nine reproducing scenes connected with the burning at the stake of a negro ravisher. The last hundred pages are composed of newspaper clippings, giving evidences of race prejudices of various public men.

It is difficult to see what the author hopes to accomplish. He will not influence the scholar, for his discussion is grossly unfair and unscientific. He may inflame the public mind, but the intelligent reader will be repelled rather than convinced. Doubtless those who are seeking every pretext to condemn the negro will hail the book as a great scientific production. Careful students, administrators, educators already perplexed by the problems of race contact, will find no help in the volume.

Sinzheimer, H. *Der Korparative Arbeitsnormenvertrag.* Pp. 132. Price, 3.20 m. Leipsic: Duncker & Humblot, 1907.

Smith, J. H. *Our Struggle for the Fourteenth Colony.* Two vols. Pp. 1271. New York: G. P. Putnam's Sons, 1907.

Reserved for later notice.

Snedden, David S. *Administration and Educational Work of American Juvenile Reform Schools.* Pp. 206. New York: Columbia University, 1907.

This volume, by Professor Snedden, of Teachers' College, Columbia University, is a helpful study of the problems which lie in that borderland between education and penology. The disappearance of the old prison discipline, the rise of the cottage system with its added possibilities of classification, better physical and moral care, vocational training both agricultural and industrial, the increased use of libraries and other aids to character-building, and, finally, the perfection of the parole system,—all are carefully discussed, both historically and comparatively.

Snyder, C. *American Railways as Investments.* Pp. 762. Price, $3.20. New York: Moody Corporation, 1907.

From time to time works appear summarizing the main facts regarding the leading railway systems of the United States. This book is written primarily with reference to the investor who is seeking information regarding the properties whose securities he may desire to purchase or to sell. Mr. Snyder has preceded his discussion of the subject of railroad investments by an introduction of sixty pages in which he defines the terms used in the study of railway investment and explains the factors affecting the earnings and stability of railroad properties. The introduction, however, is so brief that it is not a satisfactory discussion even of the elementary principles of railway finance. Likewise, the summary of the main factors regarding each railroad is so short that it yields but little more information than is to be obtained from Poor's Manual of Railroads. Mr. Snyder's book is useful, but not indispensable.

Sprague, R. F. *The True Nature of Value.* Pp. 178. Price, $1.00. Chicago: University of Chicago Press, 1907.

Steiner, Edward A. *The Mediator.* Pp. 356. Price, $1.50. Chicago: F. H. Revell Co., 1907.

This is a story of a half-orphan Jewish boy, born in southern Russia, who ultimately becomes a Christian. Owing to Russian persecution, the hero comes to America, works for a time in sweatshops, but finally enters social work, and wins the love of a wealthy girl. As a novel the story is not strong. Probably no one in America understands the complex situation of the Russian Jew better than Professor Steiner. His description of the situations in which the boy finds himself, the pathetic sorrow of the old orthodox father is excellent, and the reader feels that the author knows the facts. In general, it does not seem that this volume begins to have the value of the author's earlier book "On the Trail of the Immigrant," but it is his first attempt at fiction and may, perchance, interest many who will not read a more serious work.

Stelzle, Charles. *Christianity's Storm Center.* Pp. 240. Price, $1.00. Chicago: Fleming H. Revell Company, 1907.

The author, skilled laborer, minister, superintendent of the Department of Church and Labor of the Presbyterian Church, is interested in aggressive evangelism, and believes that the Church should so change its methods as to meet present needs. The problem is not properly stated by asking, "Do workingmen go to Church?" but by the query, "Does the Church go to the workingman?" The chapters bear such titles as: "The Trades Union;" "The City Slum;" "Social Centers;" "The Institutional Church;" "Aggressive Evangelism." The discussion is, however, extremely rambling and decidedly lacking in logical order. Nevertheless, the book is of rather exceptional merit. Here is a man, at his best when writing of the labor movement, who knows his subject and has something to offer. Every Church worker would do well to read carefully and weigh his many positive suggestions. If the Church fails to profit by such a book it speaks badly for its own future influence.

Sundbarg, G. *Bevolkerungsstatistik Schwedens (1750-1900).* Pp. 170. Stockholm: P. A. Norstedt & Söner, 1907.

Tenney, Alvan A. *Social Democracy and Population.* Pp. 89. Price, 75 cents. New York: The Columbia University Press, 1907.

As a "preliminary skirmish in the field," of the subject designated, the writer has been notably successful. We are too tardily awakening to the requisites necessary for the establishment of real social democracy. The biological factors involved supply the burden of the author's exposition, and such topics as the increase of population and social stability, modes of selection, degeneration and supply of brains, are all lifted into this larger theme. The maintenance of social democracy, he justly contends, requires an increase in population less rapid than the rise of the standard of living. Nor does a slower increase necessarily imply deterioration. A final chapter is devoted to the application of the problem to American conditions.

de Tourville, H. *The Growth of Modern Nations.* Translated by M. G. Loch. Pp. 508. Price, $3.50. New York: Longmans, Green & Co., 1907.

Reserved for later notice.

Underwood, J. H. *The Distribution of Ownership.* Pp. 218. Price, $1.50. New York: Columbia University Press. 1907.

Untermann, E. *Marxian Economics.* Pp. 252. Chicago: Charles H. Kerr & Co., 1907.

Watkins, G. P. *The Growth of Large Fortunes. Pp.* 170. Price, $1.00. New York: American Economic Association, 1907.

Welsford, J. W. *The Strength of Nations.* Pp. 327. Price, $1.25. New York: Longmans, Green & Co., 1907.

"The Strength of Nations" is, as the author states on the title page, "an argument from history." The book is a plea for protection based on historical facts. Starting with Rome, the author traces the rise of industry and commerce in Constantinople, the Italian cities, the Hanseatic League, England, the Netherlands, Germany, Spain, France and the United States. All of these countries approach their ruin when their systems of production fail.

From his historic precedents the author draws the conclusion that production can be successful only under a protective system and therefore that a nation should adopt protective import duties. "For nearly five centuries, England strove to make herself strong, united, and independent of the foreigner, by protecting agriculture, in order that the home-grown food supply might be sufficient; manufactures, in order that there might be work for English workers; and shipping, in order to breed a race of seamen. The English system aimed at making England strong, united, and independent, and accomplished its aim."

It is disappointing to wade through the mass of historical data which the author has collected, and find at the end no series of definite conclusions. While he is successful in collecting his material, he fails to round it out into a definite system of ideas. The book is called a "plea" as contrasted with an "argument," because there is not even a connected thread of facts running through its pages. If it were an argument, it would at least be consecutive, and each chapter would add something in the reader's mind to the chapter that had gone before. As it is, after going through the book, one is merely impressed with the fact that it contains a great amount of historical data, all of which points toward the necessity for protection,—but arguments, there are none.

Although the book is not based on an argument, one thought runs through all of its pages. Whatever increases the wealth and industrial prosperity of a country should be practised regardless of its justice. Expediency comes before honesty or consistency. This is, to say the least, questionable ethics, and the general impression which the book leaves upon the mind is that the author, in his zeal for industry, forgets humanity.

West, M. *The Inheritance Tax.* Second edition. Pp. 249. Price, $2.00. New York: Columbia University Press, 1908.

Winter, N. O. *Mexico and her People of To-day.* Pp. 404. Price, $3.00. Boston: L. C. Page & Co., 1907.

An entertaining account, unfortunately full of repetitions and inaccuracies, is offered by one who has evidently traveled much in the republic and has a keen appreciation of the picturesque glimpses of the national life encountered. The descriptions of the ruins of ancient civilizations are especially interesting, but confidence is destroyed by numerous misstatements such as that making such a miserable port as Acapulco "The best harbor on the coast of North or South America."

Wood, W. A. *Modern Business Corporations.* Pp. xi, 358. Price, $2.50. Indianapolis: Bobbs-Merrill Co.

Every discussion of the principles and practices governing the organization and management of private corporations may be welcomed. Mr. Wood, of the Indianapolis bar, has published a concise work on "Modern Business Corporations," in which he has endeavored to consider the legal questions connected with the organization of companies, with their financial operations, with the keeping of accounts, and with the dissolution and reorganization of business concerns. One part of the book reproduces a large number of business forms, and there is an appendix containing useful charts and financial tables. In spite of the necessary condensation, the volume will prove serviceable to business men.

REVIEWS.

Baldwin, James Mark. *Social and Ethical Interpretations in Mental Development.* Fourth edition. Pp. xxvi, 606. Price, $2.60. New York: The Macmillan Co.

It is safe to say, I think, that few persons would read this book for relaxation merely. It is not surpassingly difficult, perhaps, for a psychological treatise; but the whole thing hangs together in such a way that one must give it his best attention to appreciate the argument fully. One who will do this will be exceedingly well repaid for his effort. No one concerned with problems of development, either general or special, could be considered as abreast of the times if he had not made a careful study of this book.

What it attempts to do is to examine in detail the relations that exist between the development of the person as an individual, on the one side, and society as an organic unity on the other side. Employing the genetic method, the author seeks to show that the individual and the society of which he is a member are but aspects or perhaps poles of a unity.

The individual is the heir of all the ages of social experimentation and achievement, and this constitutes his "social heredity," of which he possesses himself by imitation. The individual is an imitative person, but he is also an inventive person. In the very process of imitation novel results are accidentally achieved, and if these have social worth they are "selected." The genius is a person who varies markedly from the general social trend, and in the direction of social approval. The individual is always a particularizing force, particularizing on social heredity; and society is the generalizing force, making universal and permanent the valuable particularizations of the individual. When any particularization is thus generalized, social development is the outcome. Society as an organism would not progress if the individual was not a particularizing agent upon his social heredity; nor would progress be attained unless the inventions of the individual were generalized by the group of which he is a member. Social progress is thus the outcome of give-and-take relations between the individual and the group.

The particularizations of any individual are an outgrowth of earlier particularizations. Social progress is always in an ethical direction, for society cannot generalize unethical particularizations of the individual. However, this does not mean that there is always ethical harmony between the individual and society. At times the individual may particularize in ways opposed by society, when either the individual must abandon his position, or society must accept his particularization. The book has already exerted a marked influence upon contemporary developmental psychology, not only at home, but abroad as well.

M. V. O'Shea.

University of Wisconsin.

Beer, G. L. *British Colonial Policy.* 1754-1765. Pp. 327. Price, $2.00. New York: Macmillan Company, 1907.

Students of American history and of the relations of Great Britain to her American colonies have again been placed under obligations to Dr. G. L. Beer. The monograph by him published several years ago on the "Policy of Great Britain towards the American Colonies" was a model of thoroughness, exactness and conciseness. The present work covering the British colonial policy from 1754 to 1765 deals intensively with a brief period. These dozen years, however, were the most determinative of all in the relation of Great Britain to her colonies, and the investigations of Dr. Beer throw much additional light upon that period—an epoch-making one in the history of Great Britain and of the American colonies.

Beginning with the study of the theory of imperial defense prior to 1754, the author proceeds to the discussion of the Albany plan of union, then takes up the proposals for the taxation of the colonies from 1754 to 1756, after which he points out the failure of the requisition system, to which resort was had during the French and Indian War. The most instructive part of the book is contained in the chapters devoted to the regulation of trade during the Seven Years' War, and to a survey of the trade of the colonies with the enemies of Great Britain during that period. Great Britain had a serious grievance against her colonies for their disregard of the mother country in trading extensively with France and the French colonies.

Dr. Beer explains why Great Britain placed such a relatively high value upon tropical colonies as compared with those on the Continent; discusses the terms of the Peace of Paris, and the relation of that treaty to the imperial interests; details the attempted readjustment of the laws of trade following the Peace of Paris, and considers the reforms attempted in the administration of those laws. The last chapters of the book deal with the question of Indian policy and colonial defense, the revenue acts of 1764-65, and the opposition of the colonies to those acts of legislation.

The volume is based mainly upon a careful study of the British state papers in the Public Record Office in London. Contemporaneous pamphlet literature has been examined and the British statutes have been scrutinized. The author's point of view throughout has been the history of British policy rather than a history of the causes of the American Revolution,—as Dr. Beer states: "On its positive side the book is a portrayal of British policy, a study in imperial history; on its negative side it is an account of the preliminaries of the American Revolution."

The book is very carefully written, but the style is not so entertaining as one might desire. In order to make the volume of value to the investigator as well as of interest to the lay reader, the author has made footnote references to authorities from which every important statement is taken. He has also put a large amount of supplementary material into the footnotes. This method of presentation has the merit of making the book rich in information, but it imposes a serious handicap upon literary style. On the whole, it seems better to make the narrative in the main body of the book as continuous and as interesting as possible, and to put the supplementary material and notes in an appendix at the end of the volume. A minor number of footnote references to authorities is not distracting, but to have a considerable portion of nearly every page devoted to notes unnecessarily increases the readers' difficulties.

EMORY R. JOHNSON.

University of Pennsylvania.

Berglund, A. *The United States Steel Corporation.* Pp. 178. Price, $1.50. New York: Columbia University Press, 1907.

This volume, published as one of the Columbia University series in history, economics and public law, outlines the conditions which gave rise to the steel corporation, the character of the combination, and its effects on industrial conditions. From the economic standpoint, of course, the chief interest centers about the first and third phases—the causative influences and the results of monopoly.

The determining factors which have brought about or favored consolidation are natural conditions, analysed as follows: (1) The geographical location of the greatest ore deposits and highest grade ores just where cheap water transportation facilitates their movement to the centers possessing the best coking coal; (2) The need for large capital in economical production, as indicated by the fact that the principal economies attained by an iron and steel concern require an investment approaching $50,000,000; (3) The varying demand for commodities, during periods of prosperity and depression, is a powerful incentive to combination for the purpose of control; (4) The protective tariff, the "mother of trusts," as shown by the rise of the tin and terne plate industry after the passage of the McKinley Bill.

After a careful analysis and discussion of the character of the steel corporation, the author concludes that it is not a monopoly. At the present time it controls only the Lake Superior ore region, while the rival plants in Birmingham and Pueblo are able to compete successfully for half the annual product. It is evident, on the other hand, that pools, price agreements and trade understandings, have been affected between the steel corporation and other producers, as a result of which the price of steel has been maintained at a more nearly uniform level. The author apparently believes that further combination will take place, resulting in a practical monopoly, the success of which would depend greatly on a protective tariff. Mr. Berglund not only gives an excellent analysis of the world's greatest industrial combination, but also gives many interesting points concerning the present and future of American iron and steel.

University of Pennsylvania. WALTER SHELDON TOWER.

Clark, John Bates. *Essentials of Economics.* Pp. xi, 566. Price, $2.00. New York: Macmillan Company, 1907.

Under this title, Professor Clark has partly fulfilled his promise made eight years ago in his "Distribution of Wealth," to write some day a volume along dynamic lines, thereby complementing the static theories advanced in his earlier work. The material of the book naturally divides itself into two parts, though the author has made no formal division of subject matter. The first part treats primarily of theoretic laws, and the latter part of their practical application. In this second field the average reader is likely to find his greatest interest.

Throughout the entire book, Professor Clark constantly eulogizes competition as the great cure-all for our so-called modern industrial ills. He applies this principle consistently in dealing with all the practical problems whether it be the railroads, labor organizations, protective tariffs or the trusts. He says, "if nothing suppresses competition, progress will continue forever," and again, "monopoly checks progress in production and infuses into distribution an element of robbery." The author does not close his eyes to any of the evils of our modern industrial system. In no instance does he try to apologize for them or minimize their influence. He constantly warns us of the fate of a society which tolerates special privilege and monopoly power to the few. However, he is optimistic throughout, because of his belief in natural economic forces which, if allowed fair play, would cause these evils quickly to disappear.

The book is written in readable style, being much less drawn out than the author's earlier work, "The Distribution of Wealth." As Professor Clark states, it was written to be available for use in class room, not as a substitute for elementary text-books, but as supplementary to them. The subject matter of many of its chapters such as, "Organization of Labor," "Boycotts and Limiting of Products," "Protection and Monopoly," will cause this book to be of much greater interest to the general public than its predecessor ever could hope to be.

Frank D. Watson.

University of Pennsylvania.

Commons, John R. *Races and Immigrants in America* Pp. xiii, 242. Price, $1.50. New York: The Macmillan Company, 1907.

Professor Commons covers an extremely wide field in this little volume, and parts of the discussion are not so detailed or complete as the reader might wish. In addition, the entire book impresses one as being rather a bundle of somewhat distinct articles than a well-planned series of related chapters. This fact, however, does not detract from the intrinsic value of each chapter.

The discussion of "Race and Democracy" teems with suggestiveness and opens to view a broad vista of present and future American problems. The questions arising in connection with the transformation of our social institutions are serious ones; for "in a democracy race and heredity are the more decisive because the very education and environment which fashion the oncoming generations are themselves controlled through universal suffrage by the races whom it is hoped to educate and elevate." In the chapter on "Colonial Race Elements," the author discredits the claims of those who find the prime cause of America's initial greatness in its former race mixtures. Plainly, the problem is not so simple in its determination.

His extensive studies of the subject have enabled Professor Commons to compress into a comparatively small space a wonderful summary of the immigration of the nineteenth century, including the status, industrial value and character of the various contributing nationalities. He affirms that immigration has intensified our cycle of booms and depressions, because foreign labor is relatively cheap and wages fail to rise as rapidly as do the prices of commodities. This evil of immigration is further intensified by our opposite policy of a protective tariff for restriction on the importation of products.

This book is valuable not only for the cursory view of American race life, but also for the quantity of information which it contains. It is mainly descriptive, although some valuable generalizations are given. Its openness and lack of bias serve only to emphasize the gravity of these social problems. Consequently no easy method of attaining their solution is promised. The chief purpose of the book is to portray conditions and life as they express themselves.

George B. Mangold.

Washington, D. C.

Day, C. *A History of Commerce.* Pp. xli, 626. Price, $2.00. New York: Longmans, Green & Co., 1907.

This is the best single-volume treatise that has thus far appeared in English on the history of commerce. The subject matter of the history of the world's commerce during the past thousand years is so detailed and voluminous that it requires great literary skill and scientific judgment as to relative values in order to cover the subject satisfactorily in a single book. Professor Day has accomplished his task with results better than I had believed possible.

The discussion of ancient commerce is wisely abbreviated to four short chapters which are intended to serve rather as an introduction to the main body of the work. Medieval commerce from the year 1000 to 1500 is covered in one hundred pages in a summary but fairly satisfactory manner. To the history of modern commerce, viz.: The three centuries from 1500 to 1800, one hundred and forty pages are devoted. The period of the nineteenth century is discussed in more detail, one hundred and eighty-five pages being given to European countries, and one hundred and twenty pages to the United States.

The most satisfactory chapters of the book are those concerned with recent commerce and particularly with the history of the commerce of European countries during the nineteenth century. The material presented is well selected and the emphasis is well placed. The discussion of the history of the commerce of the United States from 1789 to the present is somewhat disappointing, partly because so much of the limited space available is taken up with commercial geography. It would probably have been better for Professor Day to have assumed that the readers of his volume were acquainted with the commercial geography of the United States. His book is written primarily for college students who ought to study commercial geography before pursuing the history of commerce. It is to be regretted that the author did not confine his discussion of the commerce of the United States strictly to commercial questions.

From the bibliographical standpoint the book is a model. The paragraphs of the book are numbered, and at the end of the volume there is a bibliography citing authorities drawn upon in the writing of each paragraph. Those who desire to read the book through without referring to authorities may do so without the interruption and distraction of footnotes, while those who wish to study the subject more fully find at the close of the volume the references to be read in order to gain fuller knowledge of practically every topic touched upon. The lengthy bibliography also includes an alphabetical list of the standard books on commerce—a list which every well-organized library ought to contain.

Emory R. Johnson.

University of Pennsylvania.

Dowd, Jerome. *The Negro Races.* Vol. I. Pp. xxiii, 493. Price, $2.50. New York: The Macmillan Company, 1907.

In this volume the author treats of three groups: The Negritos (the Pygmies, Bushmen and Hottentots); The Negritians (the Jolops, Hansas, Ashantis *et al.*), Fallataps (Central Soudanese). The second volume will deal with Slavery and the Slave Trade in Africa and the Modern African Labor Problem. In the third volume East African negroes, the Bantus, and the American negroes will be described. Other volumes dealing with the Indians and other races are projected.

The justification for so extensive a series the author finds in the lack of definiteness in modern social theories and in the failure to properly emphasize the influence of the physical environment. "The author's first object, therefore, is to establish the fact that each race has its distinctive institutions and special evolution corresponding to the locality in which it lives or has lived. The second object is to discover the factors and laws which explain the mental and moral characteristics and particular institutions of each general racial division, to the end that the principles and laws discovered may be applied to whatever is abnormal or retrogressive." The study begins with the negro races as representing the lower stages of culture and also because of the presence of the negro in America.

"The environment first controls man, after which man controls the environment." Hence the Pygmies, Bushmen and Hottentots, dwelling in the most unfavorable areas in Africa, stand at the lowest point. The descriptions are rather unsatisfactory in this first part of the book, in large measure because of the meagreness of our knowledge respecting these peoples.

In the second part the results are better. The country inhabited by the Negritians and Fellataps is divided into four zones, from the Equator north—Banana, Millet, Cattle, Camel. The different characteristics of the peoples are well set forth, and the connection between the social developments and the country pretty clearly shown. The author has, perhaps, lost force by not completely describing each zone by itself, instead of skipping from one to another in each succeeding chapter. This method tends to give one not already familiar with conditions a confused idea of the situation. The physical features of each zone are described, followed by a discussion of the economic life, family life, political life, customs, ceremonies and the spectacular, religious life, æsthetic life, and psychological characteristics.

Mr. Dowd is generally consistent, but occasionally lapses into popular prejudices. He believes that too much emphasis is laid upon race mixtures as means of bettering conditions, yet he repeatedly suggests the same thing (pp. 201, 132). One great difficulty is that everyone who shares, as does the reviewer, the author's main conception, suffers from the vestiges of earlier beliefs which occasionally manifest themselves, but even more from dearth of material. It is worth while, however, to attempt at times to correlate all that can be gotten. Complete success is not to be expected. Mr. Dowd has given us the best description of the African negroes in brief compass yet produced. The book should be carefully read by all who have to deal with negroes in any way, or who are interested in social studies.

Carl Kelsey.

University of Pennsylvania.

Durland, Kellogg. *The Red Reign.* Pp. xxv, 533. Price, $2.00. New York: The Century Company, 1907.

This book will rank as one of the most important as well as most interesting of recent accounts of conditions in Russia. The author is a young man of wide experience, a careful and accurate observer, and possesses decided literary ability. For over a year he traveled about the country in various guises. He attended the sessions of the first Douma as a correspondent. He visited Boku and southern Russia as a Cossack officer (by courtesy of commanding officers), and was for a time boon companion with regular officers. With a brigand as guide and interpreter he explored some remote Cossack villages. He journeyed through the famine districts, and crossed the Urals into Siberia. In St. Petersburg he was brought into intimate contact with the Revolutionists.

Mr. Durland believes that the peasants are awake to the situation and that the old absolutism can never return. The government maintains itself by means of the Cossacks, an extraneous group, serving only for money, and by the great foreign loans. How long the struggle may last no one can predict. "There is a terrible menace, a grave danger, it seems to me, in this prolonged struggle. Where all standards of public and private morality are shaken, the characters of the individuals living under such a régime must suffer." . . . . "I foresee a long, long struggle." Some fifty reproductions of photographs add interest to the text. By all means read this book, not merely for its accurate portrayal of conditions elsewhere, but as a stimulant for the bettering of civic conditions at home.

CARL KELSEY.

University of Pennsylvania.

Eaton, John. *Grant, Lincoln, and the Freedmen.* Pp. xxxviii, 331. New York: Longmans, Green & Co., 1907.

The title of General Eaton's book correctly describes its contents. It treats of three more or less unrelated subjects. Eaton was a stanch admirer of General Grant, believing him to be a model of civic and military wisdom, and in this book numerous incidents are related which support this conviction of the author. Of Lincoln there is nothing new unless it be the recital of some rather remarkable confidences which Eaton says Lincoln made to him in regard to his mastership over Seward, etc. The author's memory probably played him tricks, for he has related rather too large a proportion of the well-known Lincoln anecdotes as having been first told to him. The most valuable part of the book is a summary of Eaton's work among the blacks of the Mississippi Valley during the war. This account is condensed from his report of 1864 supplemented by explanations and reminiscences. The difference between the policy of Eaton and that of the Treasury Department is clearly stated, and the author is certainly justified in the criticisms he makes of the Treasury plan which paralyzed his own work and resulted in such suffering among the blacks. But he is not correct in so magnifying the results of his own work. As a matter of fact his plans really fell to the ground in 1864 because of the inauguration of the lessee system by the Treasury Department. Had he succeeded in his work there would have been at the proper time and on correct lines a real Freedman's bureau quite different from the institution which was organized after thousands of negroes had perished. Notwithstanding his practical acquaintance with conditions among the blacks after 1862, Eaton was always profoundly ignorant of the actual conditions of slavery. For example, as a proof of negro capacity developed by a year of freedom, he refers to a self-governing community, established during the war, at Davis's Bend, on the lands of Jefferson and Joseph Davis. In fact, the Davises had for forty years been training their negroes to govern themselves by means of black courts, black sheriffs, etc. A similar instance of superficial knowledge of conditions in the South is shown by his statement that the Peabody fund "served to put the system of universal education in the South upon its feet." Of such minor instances of insufficient information there are numerous other evidences, but after all the part of the book about Eaton's own plans and experiences is valuable and all of it is interesting.

WALTER L. FLEMING.

Louisiana State University.

Edwards, Alba M. *The Labor Legislation of Connecticut.* Pp. viii, 322. Price, $1.00. New York: The Macmillan Co., 1907.

The publication of this monograph by the American Economic Association marks the passing of another milestone in the efforts the Carnegie Institution is furthering to collect material for an economic history of the United States

The purpose of the author—"to discuss the labor legislation of Connecticut historically and critically, and . . . to trace the economic effects of the different laws"—has been admirably carried out. In scope the work covers factory legislation (including child labor), the employment contract, employers' liability, boycotting and blacklisting, free public employment bureaus, mediation and arbitration, the union label, the barbers' license law, and convict labor, with a separate chapter on the State Bureau of Labor Statistics. This bureau, though charged with an occasional wrong attitude on labor questions and with an inefficiency due to lack of sufficient legal powers, is credited with more or less accurate investigations and with aiding in the passage of important legislation. The State Board of Mediation and Arbitration is regarded as a failure, "due largely to a lack of confidence in the board."

Dr. Edwards frankly confesses that the greater part of the statistics he has been able to gather are incomplete and inaccurate:—which, it may be observed, is equally the case in other American Commonwealths. Connecticut is among the backward states in the failure to prohibit the employment of women and young persons at night or in dangerous occupations. But Connecticut is unique in the close and natural relation established between the child labor and the compulsory education laws, the enforcement of both of which is properly placed in the hands of the State Bureau of Education. Organized labor, while not always pursuing "a broad-minded policy," has been "the chief factor in securing labor legislation" since 1885. Employers have usually exhibited a commendable willingness to comply with the law, though they have not hesitated to defeat some excellent measures or to weaken them before they became law. Dr. Edwards is to be congratulated on having made a valuable contribution to the literature of social legislation, in a field in which the harvest is ripe and the laborers all too few.

J. Lynn Barnard.

Philadelphia School of Pedagogy.

Fessenden, Francis. *Life and Public Services of William Pitt Fessenden.* Two vols. Pp. xiv, 741. Price, $5.00. Boston: Houghton, Mifflin & Co., 1907.

William Pitt Fessenden was a great senator and deserved a proper biography, but it cannot be said that the volumes by his son fulfil the need. Some day the work must be done over again. In the preface the editor states that the work was begun years ago by General Francis Fessenden, who spent ten years in gathering material. When he wrote out the life it was too long and had to be abridged. Perhaps this fact accounts for some of the defects in the work, for the spirit was condensed out of it. The two volumes are devoted mainly to an account of Fessenden's service in the Senate from 1854 to 1868, with very slight reference to what went on outside the Senate, whether in Fessenden's life or in the country generally. The author shows slight acquaintance with the historical literature of his period, although he sometimes attempts to give a general history of certain periods or questions. Even in dealing with Senator Fessenden, too much reliance is placed upon public speeches and debates. There is entirely too much undigested material from the "Congressional Globe" in the work—about 150 pages of lengthy quotations besides shorter ones and summaries of debates. The Report of the Joint Committee on Reconstruction is reprinted, as well as several senatorial opinions on the impeachment trial. Such matter is elsewhere accessible to most people who will read a life of Fessenden. In discussing financial matters little is done to show exactly what Fessenden did, why he did it, and why he was regarded as a master of public finance. The historical part of the work appears to be drawn directly out of the speeches of the time. Naturally men's views were then narrow and often superficial, and their language bitter, but that is no excuse for similar views or language fifty years later.

But the Life does add something to the sum of human knowledge. The author gives us a few new points about the impeachment trial and other important events, and his rigorous exclusion of nearly all that would tend to prove Fessenden a human being did not prevent the printing of some very interesting letters. How one wishes for more of them after reading forty pages of the "Globe"! Fessenden could make a letter readable. Take a few extracts from them: in regard to Tyler he said, "I wish the devil had him at the end of a pitchfork . . . . a poor animal who was never worth the snuff of a candle, or a cheese-paring, or a quid of tobacco;" of Mrs. Madison he said that she "is as upright as a pillar of salt and in about as good preservation;" of the President who was acquitted by his vote he wrote "Andy is a fool."

W. L. Fleming.

Louisiana State University.

Fisk, G. M. *International and Commercial Policies.* Pp. xv, 288. Price, $1.25. New York: Macmillan Company, 1907.

Dr. Fisk has given to teachers of commerce a book of great value for elementary work. The volume is primarily a text book, containing simple direct statements of facts rather than a discussion of policies. Starting with a general discussion of the meaning of commerce, especially in ancient and middle ages, the author proceeds to the development of modern commercial policies, discussing at length the Mercantile System, Free Trade and Protection. He next discusses the broad subject of Customs, dealing with its several topics, such as import and export duties, tariff and tariff systems and the technique of customs, such as *ad valorem*, specific and differential duties. Another section of the book is devoted to discussing commercial treaties, their nature, form and contents and the subject of reciprocity.

Dr. Fisk then devotes three chapters to the important subject of trade-promoting institutions both public and private. Under this heading, he discusses our consular service, our Department of Commerce and Labor, with its various bureaus, and such quasi-public institutions as the Philadelphia Commercial Museum. Other suggestive chapters treat of commercial statistics, navigation, politics and public institutions for the promotion of navigation. The work is valuable for its clear English, its direct statements and its rounded treatment of a broad subject within the compass of a text-book of less than three hundred pages, including the excellent bibliographies appended to each chapter.

FRANK D. WATSON.

University of Pennsylvania.

Hadley, Arthur. *Standards of Public Morality.* Pp. 158. Price, $1.00. New York: Macmillan Company, 1907.

In this work, as in all his public utterances, President Hadley is eminently safe and sane. He has no patent medicine cure-all for the economic and political ills which retard the industrial and commercial progress of the country and threaten the permanency of democratic government. There is, he finds, a striking difference between the standards of public and private morality. In industrial and political life men are lauded and honored for doing the very things that are absolutely discredited in private life. Under these circumstances the usual process is to look to legislation for relief. The legislature is, however, under our system of government, a representation of special interests or of geographical sections each with its own wants. Thus legislation too often becomes a struggle for selfish ends rather than the intelligent consideration of measures for the common good. Democracy may thus become the instrumentality by which the majority tyrannizes over the minority, while constitutional government, on the other hand, may be used to support and protect the selfish interests of a class. The permanent interests of all classes are, however, much more nearly identical than their temporary ones, and an intelligent public opinion, appreciating this fact, will gradually establish and enforce standards of public morality that protect the weak from oppression and prevent the strong from abusing their power.

MAURICE H. ROBINSON.

University of Illinois.

Hunt, Wm., and Poole, R. L. (Editors). *The Political History of England,* in twelve volumes. Vol. V. From the Accession of Henry VII to the death of Henry VIII, 1485-1547. By H. A. L. Fisher. Pp. xx, 518. Price, $2.60. New York: Longmans, Green & Co.

The general character of this series has been so fully commented on in earlier review articles in THE ANNALS, that it remains for the present review only to analyze and discuss this important and interesting volume, the fifth. The author has a well-defined and distinctive field. The sixty-two years extending from the accession of Henry VII to the death of Henry VIII, from 1485 to 1547, saw the firm establishment of the "strong monarchy" of the Tudors, the adoption of the Reformation, so far as that movement consisted in the subordination of the ecclesiastical to the civil government, and the distinct separation of the English Church from the Church of Rome, the initiation of a great intellectual movement at the English universities, and much of the social revolution on the rural manors and in the artisan towns. The period is one in which the main lines of development are relatively clear. Differing views on the nature of the Reformation, the motives of its leaders and the degree of participation of the people, will of course always be taken, but its main course is not obscure. The foreign negotiations are less tortuous and more consistent than those of either the preceding or succeeding periods. Again, the materials for a study of the period are almost all printed or fully calendared, and to an Englishman at least, readily accessible. The appendix on "Authorities" is a remarkable bibliographical showing. Of no later period are the sources so fully published.

Mr. Fisher is, therefore, to be congratulated on the field that is given him to till by the editors of this series. And he has done the work well. He is familiar with both the primary and the secondary writing on the subjects he has to discuss. He has evidently dwelt on it until the whole history has taken a consistent shape as a unified whole in his mind. His narrative has a continuity and vigor from the beginning to the end that is seldom seen in modern scientific historical work. A certain gift of epigram or quaint characterization often relieves the more serious chapters and gives piquancy to what is already seriously valuable.

The author's panegyric upon Henry VIII would probably not have satisfied that monarch so well as it will most thoughtful students of his career. "Henry at least understood his own age. Gross, cruel, crafty, hypocritical, avaricious, he was, nevertheless, a great ruler of men. His grasp of affairs was firm and comprehensive; his devotion to public duty was, at least after Wolsey's fall, constant and sustained by a high and kingly sense of his own virtues and responsibilities. Before the judgment seat of his watchful, exacting, and imperious conscience, he at least was never found wanting. Despite violent oscillations of mood he saw the larger objects of policy with a certain steadfast intensity, the preservation of the dynasty, the unity of the state, the subjection of Scotland." But Henry always shows off to better advantage when he is generalized upon than when he is treated in detail. As in the case of several other sovereigns, the wonder is that so much that was petty, selfish, personal and narrow-minded should combine into a whole of which so good an estimate can be given.

The relatively narrow restriction of this series of volumes to the political element in history seems to have bound the author of this volume less closely than some of his predecessors. There is, for instance, a full discussion of the commercial policy of Henry VII, an admirable chapter on the "Dawn of the English Renaissance," and a thoughtful paragraph on the disposition of the monastery lands. In fact, some matter concerning this last point is the most distinctly original contribution of the book toward our knowledge of the Reformation period. Largely as an inference from the studies of Alexander Savine, a Russian student at work in England, whose results are summarized in an appendix to this volume, it has been found that the confiscated monastery lands were less completely squandered than has been generally supposed.

Altogether it may be said that in this volume we have an adequate, impartial, and highly readable account of the period it covers. Our chief criticism of the work is rather negative than positive. We miss a deep perception of causes and effects, insight into a larger significance than appears on the surface, recognition of the part the unnamed populace played, as well as the named chief actors, a knowledge on the part of the writer, and a clarification for the sake of the reader, of the larger institutions of the time. But such a study of the history of the time was evidently not in the mind of the author, and we may well acknowledge the excellence and value of the history he has given us as he conceived it.

EDWARD P. CHEYNEY.

University of Pennsylvania.

Latané, J. H. *America as a World Power.* Pp. xvi, 350. Price, $2.00. New York: Harper Brothers, 1907.

The extent to which political activities in the United States have become world activities is hardly to be appreciated until their history is brought together in such a volume as this. Starting with Cuban intervention and ending with the second Hague Conference, the author presents a brilliant summary of the last decade of our foreign policy.

The task before an historian who undertakes to discuss events almost contemporary is a difficult one. The voluminous character of the material, the numerous branches of national policy, and the difficulty of putting the different factors in their proper perspective call for an ability for synthesis possessed by but few. Professor Latané has carried out the work with skill. That some of the pages savor of the magazine and that occasional overlappings occur is to be expected and is perhaps unavoidable.

The first third of the book deals with the Spanish War and its immediate results. Especially well done are the discussions of the peace negotiations, the vacillation of the administration as to the policy to be followed in the Philippines and the relations with the insurgents previous to the conclusion of the treaty. The second third takes up the consequences of the war as shown in our relations with Cuba, the constitutional questions raised by the dependencies and our new position in the Orient. The last third takes as its chief subjects the international questions involved in the Alaskan boundary dispute, the Panama Canal, the Hague Conference and the present status of the Monroe Doctrine. The latter factor, "the cardinal principle of American foreign policy," runs at the back of almost all of the discussions. The author maintains that the United States is guilty of no inconstancy to the Monroe Doctrine in its extra-American actions. As originally enunciated, the Doctrine was intended to contrast European and American conditions, therefore the entry into Asian politics is a departure into a region not originally considered, and hence one from which we did not, even by implication, exclude ourselves. "The coast of Asia has a set of primary interests of its own." Our actions in European affairs are still accompanied by a determination not to interfere with the internal policies of the nations of that continent. Nevertheless, the author holds the Spanish War was decidedly "a parting of the ways," an event the importance of which not only in international affairs but in our own constitutional history, we can yet but dimly estimate.

The chapters on foreign policy are supplemented by brief discussions of the elections of 1900 and 1904, and of present economic tendencies. A short concluding chapter presents the chief sources of material.

CHESTER LLOYD JONES.

University of Pennsylvania.

Lindsay, Thomas M. *A History of the Reformation.* Two volumes. Pp. xxxiii, 1159. Price, $2.50. New York: Chas. Scribner's Sons, 1907.

Dr. Lindsay has in these two volumes given us the best history of the Reformation to be found in English. The product of many years of study, it is written with a grasp of the subject, a vigor of movement, and a clearness of style that is not often found in such works. In fact, it is unusually readable. There is much generalization, but it is made with a virility that holds the attention, while there is everywhere the personal interest whether it be of portraiture or in dramatic portrayal of events. The sketches of "Bloody Mary" (II, 333), of von Hutton (I, 78), and of Erasmus (I, 177), of Charles V and Luther at the Diet of Worms, and of Charles V and the protesting princes at the Diet of Worms are not easily forgotten.

Without giving the space to environment that Ranke, Jannsson and Bezold have, the first 188 pages are devoted to the setting of the movement. The papacy, with its temporal and spiritual claims, is first considered, and then the political situation. Here stress is laid upon the fact that "During the period of the Reformation a small portion of the world belonged to Christendom, and of that only a part was affected either really or nominally by the movement. The Christians belonging to the Greek Church were entirely outside its influence. . . . . It was not until the heroic defence of Vienna, in 1529, that the victorious advance of the Moslems was stayed." The chapter on social conditions is especially valuable for the concrete picture of the fifteenth and early sixteenth century German town on the one hand and of the daily life of the peasant on the other, as well as the great discontent and restlessness resulting from class distinctions. The chapters on the Renaissance and Humanism emphasize that "What was once confined to a favored few became common property." "The coming revolution in religion was already proclaiming that all human life, even the most commonplace, could be sacred; and contemporary art discovered the picturesque in the ordinary life of the people—in the castles of the nobles, in the markets of the cities, and in the villages of the peasants." It is, however, in the "Family and Popular Religious Life in the Decades before the Reformation" that Dr. Lindsay finds the keynote of his two volumes. "The great Reformation had its roots in the simple evangelical piety which had never entirely disappeared in the medieval Church."

Greater emphasis is laid upon the life and work of Luther than on that of the other reformers, though William of Orange, Calvin, the Huguenots, and even Cranmer are most sympathetically treated. Indeed, whether one agrees with it or not a better plea has rarely been made for the value of the individual in history than this by Dr. Lindsay. "History knows nothing of revivals of moral living apart from some new religious impulse. The motive power needed has always come through leaders who have had communion with the unseen. . . . The times needed a prophet . . . . one who had himself lived that popular religious life with all the thoroughness of a strong, earnest nature . . . . who knew, by his own personal experience, that the living God was accessible to every Christian. . . . He became a leader of men because his joyous faith made him a hero by delivering him from all fear of Church or Clergy. . . . Men could see what faith was when they looked at Luther."

Wm. E. Lingelbach.

University of Pennsylvania.

Meyer, H. R. *Public Ownership and the Telephone in Great Britain.* Pp. 386. Price, $1.50. New York: The Macmillan Company, 1907.

This book, against public ownership like its predecessors by the same author, contains a considerable quantity of useful information, backed up in the footnotes by exact references to official and parliamentary reports, but it will produce on most readers the impression of being too one-sided to be considered a final treatment of the subject.

Likewise, in the study of the half dozen municipal telephone systems, which were in most cases bought out by the postoffice or the National Telephone Company in 1906, scarcely a reference is made to the rates in force by the private company in those cities prior to the beginning of municipal competition. In reading between the lines, however, it would appear that the municipalities gave an unlimited rate for exclusive service at about half the rates that the companies had been charging, and that when face to face with such competition, the National Telephone Company introduced new and very low rates for measured service. The resulting social and business advantages to the people from these low rates are ignored by our author, who seems to think the whole question is settled by the willingness of the cities ultimately to sell to the postoffice or the company, and by the fact that in the sale three or four of the half dozen cities did not recover quite all of their investment, including their original heavy parliamentary expenses.

With regard even to these last two points it should be asserted that most of the cities following the lead of Glasgow did not wish to sell out, but found that the government insisted on buying the plants at their replacement value in 1911, and this change of policy in 1905 was far more responsible for the sale of the municipal plants than is brought out by Professor Meyer.

Having said this in criticism of the book, it should be added that certain drawbacks upon telephone development in Great Britain through widely different policies of the government at different times and the evident weaknesses of some of those policies are clearly brought out. In many parts of the volume the author sharply criticizes Glasgow and the other cities undertaking the telephone business because they made prominent an unlimited service instead of a measured service, yet in other parts of the volume Professor Meyer has referred to the American telephone service as in every way ahead of the British. It is interesting to note that the traffic department of one of the large branches of the Bell Telephone Company, namely, the Cleveland Telephone Company, informs the writer that 90 per cent of their 32,000 subscribers in the Cleveland district are using unlimited service. This is substantially true of the rival independent company. All over the United States the Bell companies, after some experiments with the measure service, are now abandoning it. This is certainly an interesting commentary on Professor Meyer's treatment of the subject.

This book, like the others which Professor Meyer has written, will prove of great help to those who wish to marshall on one side all that can be said against public management, and any fair-minded student of the question will of course desire to understand that side and will thank our author for presenting it so clearly. At the same time room is left for a more rounded and judicial treatment of the subject.

EDWARD W. BEMIS.

Cleveland, O.

More, Louise Bolard. *Wage-Earners' Budgets.* Pp. x, 280. Price, $2.50. New York: Henry Holt & Co., 1907.

A more accurate, intense and sympathetic statistical study of the standard and cost of living of wage-earners has never been made, either in this country or in Europe. The incomes and the cost of living of two hundred families of wage-earners are here given, and in the most critical and sympathetic fashion. While this work is by no means so extensive as that of Le Play, Engel, Booth, Rowntree, or of the United States Department of Labor, it is the result of more personal and intimate knowledge of the subjects investigated, and it embodies more of the real life and ideals of the wage-earners than that of any other investigator in the same or similar fields. Mrs. More gives us, in this volume, the product of her research for a period of practically two years in that section of lower west New York City known as the Greenwich House neighborhood. Her research was of the co-operative nature, for she made investigations into the standards of living and the cost of living of those families who would intelligently aid her. Mrs. More's book is all the more valuable, since it is the result of an intimate, intense intelligent, and non-partisan investigation. The chief value of the book is the collection and tabulation of facts, though its conclusions and comparisons are in almost every instance accurate and reliable. Nowhere do we find hasty and ill-judged generalizations.

She gives us an exhaustive analysis of each of the two hundred families according to occupation, nativity, size, income from various sources, and expenditures for various outlays. In all these aspects she has a double aim: to collect and publish the facts; to discover the attitude of the wife and mother, the real manager and dispenser of the family income, "toward what is a necessity and what is a luxury, what is desirable and what is to be endured," since this clearly reflects the real standard of living of the family. In doing this Mrs. More has been at work along the borderline of the moral and the economic and social. In the future we shall, I am convinced, work much more earnestly along this border line.

Some of the conclusions of this intimate and intense investigation are: (a) That there is a constant interdependence between the size of the family and its income, and also the resulting surplus or deficit; (b) that as income increases the percentage expended for food, rent, light and fuel tends to decrease, but for clothing and sundries to increase; (c) that the chief causes of dependency are: (1) Large family with small income; (2) the illness or death of the principal wage-earner of the family; (3) the irregularity of work whether due to drink, incapacity, or industrial conditions.

As to the literary style of the book, we are at times impressed by the lack of vigor and enthusiasm, to say nothing of a lack of polish.

CHARLES LEE RAPER.

University of North Carolina.

Murray, A. M. *Imperial Outposts.* Pp. xxiv, 210. Price, $3.50. New York: E. P. Dutton & Co., 1907.

This is a carefully written record of observations made during a trip round the world on which the writer visited the ports chiefly involved in the problem of imperial defense. It is more than a book of travel, in that the writer shows on every page the technical training of the army man and a thorough knowledge of present-day international relations. Nor does the national bias appear, though the subject is one where we would naturally expect it to be found. Criticism is meted out where needed, especially to the management of the colonies of Aden and Singapore, and to the unsatisfactory status of the foreign community in Shanghai. The theme of the book is to demonstrate the necessity of protecting British trade routes by the maintenance of a navy that shall truly "rule the seas." In connection with this idea the Japanese Alliance in its relation to British fighting power is discussed at length. The standard of a navy greater than "any possible two-power hostile combination" is accepted as essential. The present distribution of the English navy and the improvement in coaling and refitting stations present a good idea of the care with which England is guarding even the farthest branches of her commerce.

The swift changes in progress on the diplomatic chessboard of the near and far East have made many of the statements true six months ago already out of date. The discussion of Anglo-Russian relations both in Afghanistan and Persia no longer fits the case as is also true of a portion of the discussion on the status of Mesopotamian politics. The more permanent features, however, dealing with the strategic advantages and dangers of the Island Empire are well discussed and in a way that can be appreciated by the average man. Though written from a military viewpoint the book is readable from first to last. The author adopts the plan of stating facts rather than presenting argument, a method which proves thoroughly convincing to the reader.

CHESTER LLOYD JONES.

University of Pennsylvania.

Ortuzar, Adolfo. *Chile of To-day.* Pp. 508. Price, $5.00. New York: The Tribune Association, 1907.

In this work, which is compiled annually by the Consul-General of Chile in New York, an attempt is made to present in succinct form the progress of the Republic of Chile during the year. The author has collected a mass of valuable information which will be of great service to everyone interested in the South American affairs. The description of the progress in agriculture, industry and commerce, and particularly the remarkable strides made in the nitrate industry, will be a revelation to those who have not given special attention to Latin-American affairs. Another significant fact which is brought out by Mr. Ortuzar's description of the governmental system is that while there are sudden changes in the Chilean cabinet owing to the attempt to work a parliamentary system of government, the fundamental basis of the Chilean political system is firmly established. Although cabinets may change, in fact do change so rapidly that six months is deemed a long life for any one ministry, these changes do not affect the security of person and property. It would be most valuable if we could have such a series of year-books for every one of the South American countries.

The only suggestion to be made is that annuals such as these should be written in a more critical spirit. In reading Mr. Ortuzar's book one has the feeling that the idea of propaganda occupies too large a place in the preparation of the work. This tone is certain to arouse the feeling that it is intended as evidence in proof of Chile's importance. Because of this fact it is not likely to carry the same weight that it would have if the tone of the work were somewhat more judicial.

L. S. ROWE.

University of Pennsylvania.

Shaw, Albert. *Political Problems of American Development.* Pp. vii, 268. Price, $1.50. New York: Columbia University Press, 1907.

This work is indispensable to every student of American political institutions. The author has not devoted himself to a study of the structure of government, but rather to its actual operation and to an analysis of the forces that have determined our national policy. There are few men in the country who could undertake such a work and carry it to successful conclusion. In every chapter the author shows not only his broad grasp of the subject, but also his ability to interpret the thought of the American people on great national problems. His success in this respect is not surprising to those who have followed the excellent summary of current events which appears each month in the "Review of Reviews." This volume will be of equal value to the university student and to the great body of citizens who are seeking light and guidance in national affairs. The author holds no brief, and his book is not an argument for any partisan policy. It is a clear judgment of a keen observer and careful student of American affairs. This book will rank with Henry Jones Ford's "The Rise and Growth of American Politics," as a study of the facts of American political development.

L. S. Rowe.

University of Pennsylvania.

Sumner, W. G. *Folkways.* Pp. v, 692. Price, $3.00. Boston: Ginn & Co., 1907.

A generation ago, Professor Sumner was one of the ablest advocates of free trade in this country. The same clear thinking and power of expression which marked him then are revealed in this volume. The present work is an excursion made necessary by the larger study of society on which he has been working for many years. The range of the author's reading is indicated by the fact that sixteen pages are needed for the index of works cited.

"The folkways are habits of the individual and customs of the society which arise from efforts to satisfy needs." They win traditional authority. "Then they become regulative for succeeding generations and take on the character of a social force." They arise unconsciously and "are not creations of human purpose and wit." They may be founded on mistaken inferences; they may even be harmful. By discussion and comparison they are harmonised as philosophy develops recognition for principles. Folkways are of supreme importance. "The life of society consists in making folkways and applying them." The mores "are the ways of doing things which are current in a society to satisfy human needs and desires, together with the faiths, notions, codes, and standards of well living, which inhere in those ways." Thus arise conventions which, though often denounced, are necessary. The mores are rigid and inert and change with difficulty. A society is usually unconscious of its own mores till it comes in contact with different peoples. The mores are seldom altered by direct application of intelligence.

The general theory being posited in the first two chapters, the author thenceforth makes more scientific application of it. In the balance of the book such topics as The Struggle for Existence, Labor, Slavery, Cannibalism, The Marriage Institution, Incest, Asceticism, Education, are treated *in extenso* with a wealth of illustration.

By many Professor Sumner's views would be considered radical in the extreme. There are no final standards. "The mores can make anything right and prevent condemnation of anything." Yet, no one can take exception to the spirit and method of the author no matter how much he may dissent from his philosophy. The author is seeking to establish the facts. Nevertheless, the criticism of many existing conceptions and institutions is keen and cutting. The book is decidedly thought-provoking. The discussion will not fail to make an impression. Personally, I have found the book of great value. Professor Sumner is not so much seeking to establish a theory as to explain certain human institutions. Because of the frank and honest character of the study it is to be highly commended particularly for advanced students of sociology.

CARL KELSEY.

University of Pennsylvania.

Trevelyan, Sir George O. *The American Revolution.* Part III. Pp. xii, 492. Price, $2.50. New York: Longmans, Green & Co., 1907.

From the time when Burke wrote its contemporary record in the "Annual Register," the English Whigs have given us the most readable histories of the American Revolution, and this, the latest contribution from that prolific source, fully maintains the standard of literary excellence. For an English writer to favor the American side does not necessarily mean an unbiased mind. The English party conflicts of that date were bitter and have been inherited as family feuds, while the present interest which all Englishmen feel in the problems of colonial government renders their discussion of many phases of Revolutionary history less detached than that of American students. Mr. Trevelyan has his full share of prejudices. He hates the Tories, both English and Americans; he has little use for the French, and belittles Vergennes by exalting Beaumarchias; he can see no good in any opponent of Washington, and no fault in his supporters. He is devoted to the Whigs, to Washington, Morris and Franklin, and to the Quakers. In fact, scarcely an individual crosses the page without receiving the stamp of the author's judgment. These judgments are founded on an acquaintance with the literature and correspondence of the period probably more extensive than that of any previous writer on the subject, and the result is a narrative as vivid as a source and with a breadth of information and of views impossible to a contemporary writer.

This substantial volume covers a period of eighteen months, but this is not the result of an uncritical inclusion of unimportant matters, but of the detailed study of the really important events of the period. The significant military operations are given with an excellent comprehension of their important features, and with an admirable description of the background of physiographical conditions and of the state of public opinion. Particularly good is the impression of the control of the country by the patriotic forces and the futile assistance of Loyalists to the British, in view of the exaggeration of the importance of the latter element in recent American studies; though in that, perhaps, an opposite extreme is reached. No book brings out so clearly, moreover, the services of General Washington during this period. The discussion of diplomacy emphasizes the influence of Frederick the Great, and perhaps unduly discredits the earliest American efforts. It is rather a stimulating sketch than a study. The author's acquaintance with legislative materials is far less satisfactory than his grasp of more personal matter, and the internal history of the Union and the states receives little attention. The book is scholarly and free from vulgar errors of fact, and will have a permanent place in the literature of the subject both for the scholar and the more general reader.

CARL RUSSELL FISH.

University of Wisconsin.

PUBLIC UTILITIES REGULATION IN NEW YORK

By Henry Bruère,
Director, Bureau of Municipal Research, New York.

No city in America is more acutely conscious than is New York that it has a public service corporation problem. For years the wanton mismanagement of its street railway systems has been a matter of daily discussion. Repeatedly, political campaigns have been waged for and against the influence of the gas companies. It was no sudden exasperation, therefore, which made possible the centering of the campaign of 1905 on the question of municipal ownership of these utilities. Now, while the result of this campaign is still in doubt, New York has involuntarily undertaken a program of elaborate regulation of transportation and lighting corporations. In 1907 the governor of New York urged the passage of a special act providing for a recount of the votes cast at the last municipal election to determine whether the voters of the City of New York actually endorsed by majority vote a program of municipal ownership of existing public utilities. In addition he advocated the provision of an effective and intelligent means of public regulation of these same utilities, privately owned. Indeed, hard upon the widespread enthusiasm of the past decade for municipal ownership, the country is now witnessing a general tendency towards increased regulation.

While this tendency towards regulation is in a sense reactionary from the public ownership movement, it aims to secure the same definite ends in improved service as are sought by the advocates of outright assumption of ownership by the municipalities. The states are generally undertaking a more rigid regulation of public service corporations. Many causes have contributed to this result, and among them the public ownership movement itself, but none of greater moment than the increasingly general conviction that adequate service is a matter of public responsibility, and that the community, whether state or municipality, has definite obligations with respect to the service rendered by public utility corporations of its creation. The arbitrary exercise of regulative power, without regard to the various elements involved in the proper operation of public utilities, may only serve to develop increased ingenuity in anti-social practices on the part of the corporations controlled and regulated. To be ultimately effective, public participation in the operation of public utilities, through so-called regulation and control, must seek not only adequate *service* at reasonable rates, but efficient and economical management of corporate affairs as well. Economical management, reflected as it would be in increased corporate profit or reduced cost to the consuming public or both, is a factor of great importance in the educational possibilities of public participation in the management of public utilities. With responsibility to "profit and loss" as well as to community needs, a method of public administration of these utilities may eventually be elaborated by the agencies of control, which would serve to relieve of many of its expected dangers the transition from private to public ownership and operation. That this may prove in part the function of the recently created public service commission for New York City now seems probable. It is confidently asserted by counsel for the commission, after an extensive inquiry into the financial condition of the New York City and Metropolitan Railway Companies, that the profitable operation of the lines controlled by these companies, in accordance with the terms of law and the demands of the public, will not again be possible under private ownership.

The New York Public Service Commissions Law

The public service commissions law, of the State of New York, taking effect July 1, 1907, established two commissions for that state to regulate and control common carriers, including railroad corporations, express companies, car companies, sleeping-car companies, etc., gas companies and electrical corporations. One of these commissions has jurisdiction over the first district, which includes only the City of New York, and the other over the second district, including the rest of the state. These commissions, within their respective jurisdictions, succeeded to the powers of the former railroad commissions, long-established and always innocuous, the gas and electricity commission created in 1905 after the legislative investigation of gas companies in the City of New York, and the state inspector of gas meters.

The commission of the first district succeeded to the duties of the rapid transit railroad commission, and thus, in addition to regulatory responsibilities, is charged with the development and construction of rapid transit railways in the City of New York. For the execution of its functions the New York City commission has already developed an elaborate organization whose maintenance will cost upwards of $1,000,000 in 1908. With the exception of the salaries of the commissioners and the secretary (amounting to $81,000, which are paid by the state), the expenses of the commission of the first district are payable by the City of New York. Although the city must provide the cost of maintaining the commission, it has absolutely no voice in determining the extent or nature of its expenditures. In the event of the refusal of the proper municipal bodies to provide what the commission deems an amount adequate to its needs, recourse may be had to the appellate division of the supreme court, whose determination of the commission's needs is binding upon the city. It is provided, however, that the commission may secure a repayment of the city's expenditures in its behalf from the bidder or bidders at the public sale of franchises for the operation of rapid transit railways.

At the head of this organization are the five commissioners, each of whom receives a salary of $15,000, half again as large as the salary of the governor, and equal to the salaries received by the mayor and the comptroller of the City of New York. In charge of its office, and of the bureau of gas and electricity, is the secretary, with a salary of $6,000. In charge of the clerical force is an executive secretary. In charge of the bureau of statistics and accounts is a chief statistician and a chief accountant. In charge of the law department and franchise bureau is the commission's counsel, with a corps of assistants. The chief engineer is in executive control of a bureau of subway construction, consisting of six engineering divisions, and departments of design, stations, sewers and material, and a bureau of transportation, composed of subbureaus of equipment inspection, traffic inspection and accident inspection. This is the elaborate enginery provided by the State of New York to regulate and develop the public utilities of the City of New York.

It is a significant fact in the history of our democracy that the regulation of the public utilities of the greatest city in America should be vested in a state commission appointed by the governor and absolutely irresponsible to the community whose interests it is intended to conserve. It is, of course, true that the close affiliation between the great public service corporations of the metropolis and the ruling political party would make effective municipal control only remotely possible. But while this conclusion is inevitable from the history of the relation of local politics to traction and lighting enterprises, it must be remembered that state action followed immediately what is probably the most vigorous expression of public appreciation of the gravity of a local public utilities situation that has ever been registered in America, with the possible exception of the Chicago election of 1905. While the theory of municipal subordination to state control and the dependence of the municipality on the legislature for power adequate to control local corporations is well established in law, it is difficult to find justification for the removal of the power to construct municipally-owned rapid transit railways from the hands of the municipality, for whose use the railways are designed, and from whose resources they are constructed. The abolition of the local board of rapid transit railway commissioners one year after the appointment to vacancies in their body was vested in the mayor of the city makes community control over its utilities seem remote indeed in New York. There is some compensation, however, in the fact that the terms of the rapid transit act require the operation, by the public service commission itself, of the subways or elevated roads publicly constructed, in the event of the commission's inability to make satisfactory terms for their operation by private enterprise. In that case there will be provided a direct opportunity in the field of public operation for exercising expert powers developed through regulation of private corporations.

With respect to its provisions relative to railroads, the New York law is closely modeled on the interstate commerce act. Its regulatory powers are considerably enlarged over those granted to the old railroad commission. That body, originally established in 1856, then abolished, and recreated in 1882, while entrusted with "general supervision of all railroads" had been carefully denied power to make its supervision effective. The most drastic measure available to it in the event of unlawful conduct on the part of a corporation was to report such conduct to the attorney general.

The board was vested with no power to issue orders, being restricted to *recommendations,* except in the matter of forms of accounts to be kept by the corporations. The provisions of the railroad law governing the powers and duties of the railroad commission were clearly of corporation origin. The very nature of the law governing its acts made it subservient to the railroads, at whose expense it was maintained, and valueless as an instrument of public control. The law expressly provided, for example, that the commission should not give publicity to information in its possession concerning the management and operation of railroads, if in its judgment the public interests did not require it or if the "welfare and prosperity of railroad corporations of the state might be thereby injuriously affected."

As they affect street railroads, the powers of each of the new commissions in its respective jurisdictions may be summarized as follows:

1. To prescribe the form of accounts.
2. To examine books, records, contracts, documents.
3. To prescribe the form of report.
4. To investigate on its own motion violations of law or orders of the commission.
5. To investigate complaints.
6. To take action on complaints, if necessary.
7. To fix rates.
8. To prescribe equipment.
9. To order repairs and improvements.
10. To prescribe the frequency and time of trains and cars.
11. The consent of the commission is required to validate:
    - (*a*) Assignments, transfers and leases of franchises; contracts and agreements with reference to franchises;
    - (*b*) The holding of the stock of one street railroad corporation organized under the laws of New York, by another, domestic or foreign.
12. The law further forbids any corporation, domestic or foreign, from purchasing or acquiring, taking or holding, more than 10 per cent of the total capital stock issued by any street railroad corporation organized or existing under the laws of New York, except where stock is

transferred or held for the purpose of collateral security, and then only with the consent of the commission having jurisdiction.

13. Issue of stocks, bonds and other forms of indebtedness are prohibited for terms longer than twelve months except on the approval of the commission. Its consent must be premised on inquiry and investigation. The commission has now power to authorize the capitalization of any franchise in excess of the amount, exclusive of any tax or annual charge, actually paid to the state or political subdivision thereof for the grant of such franchise. The capital stock of merged corporations may not exceed the par value of their respective capital stocks and any sum actually paid in cash. A contract for consolidation or lease may not be capitalized, nor may any bonds be issued against any contract for consolidation or merger.

The powers of the commissions with respect to gas and electric lighting companies are identical with those formerly possessed by the gas and electric light commission and the inspector of meters. They have general supervision over persons and corporations authorized to use the streets and public places of any municipality, through which to transmit gas or electric current for light, heat or power, or to maintain underground conduits. With respect to this supervision the commissions are given power to fix the standard of illuminating power and purity of gas and to prescribe methods of regulating the electric supply system, and, in addition, to require gas sold to conform to its standards with respect to illuminating power and pressure. For these ends they have access to and may examine the plants of the companies within their respective jurisdictions.

The commissions may prescribe uniform methods of keeping accounts for persons, companies or municipalities engaged in the manufacture, sale or distribution of gas or electricity. They must require the submission of an annual report containing information respecting capital stock, bonded and other indebtedness, receipts and expenditures, names and salaries of officers, wages paid employees, dividends paid, and location of plants. This provision also applies to municipalities engaged in operating gas or electric systems. Each commission is empowered to examine the books of corporations, persons or municipalities under its supervision.

The commissions are required[1] to keep informed on the methods employed by the companies under their supervision and to "see that their property is maintained and operated for the security and accommodation of the public and in compliance with the provisions of law and of their franchise and charter." They also exercise control over gas and electric meters, testing all new meters before setting and any old meter on complaint. As in the case of railroad or street railroad corporations, franchises to gas companies are inoperative without the consent of the proper commission. The provisions respecting the issue of stock, bonds and other forms of indebtedness, franchise, capitalization, transfers, leases, contracts and agreements applying to street railroad companies also apply to the lighting corporations. The provisions of the Massachusetts law respecting complaints concerning the purity, pressure and price of gas and the initial efficiency and price of electricity are practically incorporated in the New York law. After proper petition and hearing the commissions may fix the price of either commodity.

With respect to complaints concerning the character of service, it is designed that the commissions shall be particularly active. The law requires that their offices be open from eight in the morning until eleven at night to facilitate the making of complaints. Failure to comply with the orders of the commissions with respect to railroad or street railroad corporations is punishable by fine not to exceed $5,000. Non-compliance by lighting companies is punishable by $1,000 fine. The commissions may take summary proceedings through counsel to compel by mandamus or injunction compliance with law or their orders.

Very few novel powers will be found in these provisions by those familiar with the development of corporation regulation during the past quarter century. The Massachusetts gas commission has for more than twenty-five years exercised supervisory powers of like character. The powers of the commissions relative to the approval of stock and bond issues and inter-corporate agreements are in a measure prompted by the peculiar experience of New York City in the matter of street railway and gas company consolidation, but have also been exercised for some years almost equally extensively by the Massachusetts gas commission. The Massachusetts railroad commission has for some time been vested with power to compel on penalty such additional service as it deems necessary. Doubtless like provisions will be found in the laws governing or regulating commissions in other states. The provisions relative to stock transfers, franchise leases, etc., are designed to prevent in the future such transactions as have already brought the principal street railway system of New York City to bankruptcy, and are to that extent locking-the-barn-after-the-horse-is-stolen measures.

While the gas commission had its immediate origin in the gas investigation of 1905, the creation of a commission to control the gas companies of New York City had been under discussion at various times since 1885. The investigation in that year and the year following, which resulted in the limiting of the price of gas to $1.25, was also followed on two succeeding occasions by the introduction of bills for the creation of a state commission, but without effect. The agitation concerning the quality of gas service in New York City from 1902 to 1905 finally resulted in the creation of the commission to whose powers the public service commission has succeeded. Almost immediately after its creation the gas and electricity commission was estopped by injunction from the enforcement of its orders respecting a reduction in the price of gas in the City of New York. The public service commission of the first district has, therefore, pending the settlement of the question of the rate reduction in the United States Supreme Court, confined itself to supervision of the service rendered by the companies. Its activity in this field has been confined to the adjustment of complaints and the testing of meters. Under the supervision of the commission of the first district are sixteen gas companies, nine electric companies and three gas and electric companies. The total reported amount of stocks and bonds of these companies issued and outstanding on June 30, 1907, was $353,290,533.80, or approximately one-half the amount of the funded debt of the entire City of New York. The gross earnings of these companies were for the year ending June 30, 1907, $48,363,840.20, their expenditures for operation during the same period being $36,318,491.09. Under the supervision of the commission of the second district are 440 persons, corporations and municipalities engaged in the manufacture and sale of gas or electricity, representing a reported investment of approximately $500,000,000.

Although estopped by injunction from exercising its powers with respect to rate regulation in the first district, the constitutionality of the delegation by the legislature of its power to fix rates has been judicially supported in a case brought in the City of Saratoga.

Activities of the New York City Commission

The public service commission of the first district has inaugurated an active program with respect to the transportation system of Greater New York. This system, operated by the Interborough-Metropolitan consolidation and the Brooklyn Rapid Transit railway, representing a combined stock, bond and floating indebtedness of $617,676,000 and reported assets of $624,076,000, early became the subject of its public inquiry. This inquiry served to verify what was generally understood, namely, the depleted condition of the despoiled Metropolitan railway, representing practically the entire surface railway system of Manhattan and the Bronx. Misappropriation, diverted funds, extravagances and gross overcapitalization, when brought to light, quickly drove the New York City railway, the holding company, and the Metropolitan and Third Avenue systems, into voluntary receivership, where the authority of a federal court serves as a possible protection against the immediate orders of the commission. For the entire time since its creation, the commission of the first district has been actively employed through special counsel and a staff of accountants in unraveling the intricacies of the stock juggling which has marked the recent history of surface railroads in New York. How effective the accounting supervision of the former board of railroad commissioners over this street railroad combination had been, was shown by the failure of that body to question a reported cost of $2,553,697 per mile of the Fulton Street railroad operated by horse-cars, while accepting a statement of cost of $24,836 per mile, for the Tarrytown and White Plains road operated by electricity. Charges repeatedly made by a former employee of the Third Avenue railway relating to gross misuse of funds in the electrification of the roads were thoroughly borne out. It was shown in this connection that the cost of electrifying the Twenty-third Street railway had exceeded one-half million dollars per mile. Book assets included, for example, paid salaries of officers, contributions to civic organizations, and counsel and legislative lobbyists' fees.

Concurrent with this activity in determining the true financial condition of the railway systems, the commission has made a careful examination of the physical condition of the equipment of the surface railways and has compelled the immediate improvement of defective and neglected rolling stock. The method of the commission with respect to the problems of regulating transportation conditions is to arrive at a basis for judgment through a careful investigation by experts. In this manner, for example, it has undertaken the improvement of surface transit conditions and the handling of traffic in the subway. The procedure of the commission in securing improvements is to notify parties affected, submit a proposed form of order, hold a hearing at which the representatives of the company and other parties in interest are heard, and after hearing, issue the order, confirmed or modified as the case may be. The commission of the first district held 179 hearings on orders and complaints during the first six months of its existence. These hearings were conducted pursuant to the provision of the law which imposes upon common carriers the duty of providing safe and adequate facilities for the transportation of persons. The initiative of the commission is conditioned on the failure of a carrier properly to perform its functions in this respect. It is therefore necessary for the commission to establish the default of the company. This is done either by investigation of complaints or by independent investigations, through the experts of the commission. In consequence of these investigations, the commission issued to January, 1908, 126 orders. Of these 84 were based upon complaints requiring immediate action and 42 were orders issued after hearing.

The development of additional rapid transit routes is an important function of the New York City commission. The preparation of plans and contracts and supervision of construction are in the hands of a corps of engineers organized by the former board of rapid transit railway commissioners and taken over intact by the new commission.

A noteworthy feature of the work of the commission of the first district has been the reporting and investigation of accidents on transportation lines. The companies are required to report all accidents immediately by telephone. The total number reported in the six months ending December 31 was 24,209, of which 1,147 were of serious character and 288 resulted in loss of life. In striking contrast, the inefficiency of the method of the former railroad commission is shown by the fact that in July, when the method employed by the railroad commission for reporting accidents in writing was still in force, only 240 accidents were reported, while in August, under the new system adopted by the present commission, requiring immediate verbal notification, 5,871 were reported. Acting upon this information, the commission will undertake a study of means of accident prevention and compel the provision of safety appliances, the absence of which at present from the surface cars of New York is notorious.

Regulating Stock and Bond Issues

Opportunity for the exercise of its authority to regulate stock and bond issues by the city commission has only recently arisen. Application has been filed by the Interborough Rapid Transit Company for permission to issue $50,000,000 in bonds. The purpose of this proposed issue is to retire the company's note and floating indebtedness. The note indebtedness amounting to $25,000,000 was incurred in the building of the new sub-East River (Steinway) tunnel, in meeting the excess cost of the new Battery tube constructed by the company for the city and in purchasing certain Long Island surface lines. The action of the commission on this application will demonstrate in a forceful way its measure of usefulness to the community. The power to regulate the issue of stock and incurrence of other forms of indebtedness by the utility corporations is primarily designed to prevent deterioration of service by reason of depleted resources through overcapitalization. At the same time, the regulation of corporate indebtedness is a matter of moment from the standpoint of public morality. The evil effects upon business and industrial morality of such fraudulent use of indebtedness certificates as was practiced by the railway systems of New York City are difficult to overestimate. The benefits accruing to innocent purchasers of these securities through the proper exercise of public control over their creation will be considerable. It is asserted that the publicity given to the financial methods of the New York City railway has been reflected in an increase in dishonest practices among the employees of the companies, particularly in the theft of cash fares. So conspicuous an anti-social act as the repeated capitalization of the growth of earning power of the various railways many times in excess of actual investment must unquestionably have affected the morals of the companies' employees, government officials exercising authority over them, their stockholders, and the public at large.

The process which produced the present traction system in New York is generally known. The Metropolitan Street Railway Company, organized in 1893, guaranteed fixed charges from 1½ to 18 per cent on the stock of its subsidiary leased lines, and then capitalized the guarantee for upwards of twenty millions of dollars; thereupon, it in turn leased itself for 999 years for a guarantee of 7 per cent on its stock, and payment of fixed charges to the New York City Railway Company. The New York City Railway Company in turn capitalized its guarantee to the Metropolitan stockholders, and a few franchises for another $20,000,000. The stock of the New York City Railway Company, in turn, fell into the control of a third holding company, the Metropolitan Securities Company, which was formed of the same interests in slightly different combination, as composed both the Metropolitan and the New York City railway companies. The Metropolitan Securities Company as the next step in the construction of the inverted financial pyramid, issued $30,000,000 of securities based upon its control of the New York City Railway Company, a few undeveloped franchises, some of them worthless except to capitalize, and a short Bronx railway. Finally, the creation of the Interborough Metropolitan Company, by the combination of the Manhattan and Bronx holdings with the Manhattan subway and elevated lines and the Belmont Long Island surface lines, added $155,000,000 in new stock, and bonds and notes for $85,000,000. This combination represents a capitalization of $373,881,500 with an outstanding bonded, note and certificate indebtedness of $271,805,318. No one can tell how much of the stock capitalization of the system represents water, but a conservative estimate would probably place it at $200,000,000 or more. What has become of the $271,804,318 secured from the sale of bonds, certificates, etc., cannot now be ascertained. The solution of this mystery is forever prevented by the destruction of the books of the Metropolitan Street Railway Company in 1902.

The public service commission law provides that when an application is filed with a commission for the issue of stock or bonds, the commission shall, if it approve, issue an order stating that in its opinion the use of the capital to be secured by the issue is reasonably required for the purposes of the corporation. The law further provides that the commission shall, in order that it may arrive at a basis of judgment with respect to the application, make such inquiry or investigation as it may deem of importance. A proper inquiry in the present case might well be with respect to uses to which funds secured from the various previous issues have been put. These issues were made with the approval of the former board of railroad commissioners, secured on a statement of the intended uses of the funds. That they were frequently employed to make good the accumulated neglect of rolling stock and equipment is suggested by the assertion of the receivers of the New York City railway in their recent application for authority to issue receivers' certificates. In this application they said: "If for the last few years the New York City railway had made the expenditures necessary to keep the rolling stock, track and sub-surface in first-class condition, it probably would not have been able to pay to the Metropolitan Street Railway Company its stipulated rental (7 per cent on $52,000,000 and fixed charges—rental, in 1906, $10,000,000).

To govern applications for the increase or reduction of stock or bond indebtedness the commission has established the following regulations:

1. That the petition contain a sworn statement in detail of the financial condition of the company, including, among other information, the amount and kinds of capital stock outstanding and the rate of dividend declared thereon for the preceding five years; the outstanding indebtedness and whether and how secured; the amount of stock of the petitioning company held by other companies, their names and the amount held by each.
2. That the petition declare the use to be made of the capital to be secured by the issue, how much for the acquisition of property, how much for the construction, completion, extension or improvement of facilities, how much for improvement of service, and how much for the discharge or refunding of its obligations.

3. That the petition state whether any of the outstanding stock, bonds or other obligations of the company has been issued or used in capitalizing any franchise or any right to own, operate or enjoy any franchise or any contract for consolidation or lease, and if so, the amount thereof and the franchise, right, contract or lease so capitalized.
4. If the stock is to be issued by a corporation formed by the merger or consolidation of two or more other corporations, the petition must contain a complete statement of the financial condition of the corporations so consolidated.

The commission of the second district has, in passing upon an application of a railway company for the issue of bonds, followed the procedure which it is likely the commissions will regularly follow. Inquiry was made by examination of records and witnesses concerning the uses made of previous issue. Having determined to its satisfaction that the expenditure of previous issues had been properly made and that the extensions proposed were of a desirable character, the commission indicated its willingness to approve the application, provided it were amended to specify definitely the term of the mortgage by which it was proposed to secure the bonds, the rate of interest to be paid on the bonds and the arrangement made for the sale of the issue. At the same time an application to retire 4 per cent bonds maturing in 1924 with 5 per cent bonds was denied on the ground that such action would impose an unnecessary burden on the petitioning company.

Regulation Through Accounts

The public service commissions are vested with power to establish a uniform system, and to prescribe the form of accounts, records and memoranda to be kept by the corporations under their control, and the manner of their keeping. The law requires, however, that the system of accounts prescribed shall conform as closely as possible to the forms and methods established by the Interstate Commerce Commission. It is made illegal for any corporation under the control of the commissions to maintain accounts, records or memoranda other than those prescribed by the commissions.

It has long been an element of the power of the various state railroad commissions to prescribe the form of accounts to be maintained by the common carrier. In New York the railroad commission, while vested with the power, was inactive in enforcing its directions, and made no effort to secure uniformity, for many years neglecting to fill a vacancy in the position of accountant on its staff. The past failure of the regulating commissions properly to utilize the power to prescribe the form of accounting records and adequately to prescribe the character of classifications to be maintained, as well as their failure thoroughly to exercise their power of examination, explains much of their ineffectiveness. From the standpoint of control too much emphasis has been placed on uniformity, desirable as it is for statistical purposes, and too little, if any, on *classification*. It is of great advantage that excellent beginnings have been made by the Interstate Commission. The proper classification of expense items, the inclusion of maintenance burdens in operating expense, and the establishment of depreciation accounts will greatly facilitate the service commissions in preventing unnecessary bond issues and false payment of dividends and will provide a basis for the current replacement of worn out equipment.

The commission of the second district has already ordered the steam railway carriers of that district to instal the system prescribed by the Interstate Commission for accounting for operating revenues, operating expenses, expenditures for road and equipment, and for locomotive, car and train miles.

In formulating a system of accounts for street and interurban railways operated by other motive power than steam, the two commissions are co-operating with the Interstate Commission and various interested railroad associations, as well as railroad commissions of other states. It is announced that the aim of the commission is to establish a standard system for street railway accounting throughout America. The following pronouncement has been made by the commission of the second district, as its settled conclusion in the matter: "In prescribing a uniform form of accounts for electric railways within its jurisdiction and under its supervision, the commission will provide a depreciation account relating to all classes of property subject to depreciation." It is assumed that the commission has in mind, for purposes of control, the value of very careful classification in the accounts subject to depreciation. An adequate control of the service will require depreciation accounts for every class of equipment, as well as road bed, rails and structures.

The commission of the first district has not selected the head of its division of accounts, although the statistical work of the division has already been placed in experienced hands. In its first report, the commission says; "From the very beginning, this commission has realized the importance and necessity of a uniform system of accounts for all corporations of the same kind, not merely because of the value of uniform *statistics* to this commission in arriving at wise decisions, but also because of their value to the companies themselves, to the holders of their securities, to investors and to those who use the service—the public." This commission has likewise promulgated orders for the maintenance of accounts by the railway corporations under its control, based on the classification adopted by the Interstate Commerce Commission.

In providing a standard, uniform system of accounts for gas and electric lighting companies, the two commissions have acted in harmony and in co-operation with the companies. No announcement, however, has been made of their conclusions.

The commission of the first district is seriously considering the possibility of conducting an annual audit of the companies under its control similar to the public audit of its lighting companies conducted by London. By this means alone can it secure adequate control over the financial operations of the utility corporations. Sworn statements by the companies are valueless as a means of control. Self-conducted audits only suggest the necessity for concealment. It is unfortunate that there is present doubt of the authority of the commission to conduct outright audits of the corporations. The power to *examine* the accounts does not, it is now believed, authorize the auditing of funds, revenues and expenditures and the independent determination of assets and liabilities. Given this power, regulation may prove to be not only a means for controlling the financial operation of the corporations, but of educating the public to a realization of the need for introducing a proper basis for audit in the accounts of its governmental institutions. There is at present no department of the government of the City of New York which ever receives or is susceptible of a proper audit. The department of finance, whose financial transactions exceed those of all the public service corporations under the jurisdiction of the first commission, has never been audited, although the city has for more than thirty years supported an auditing agency created for just that purpose.

Conclusion

It is of course too early to draw conclusions respecting the efficacy of the work of the New York commission. While the intent of the New York law has been expressed in earlier statutes, notably in the laws governing the Massachusetts gas and electricity commission, no measure has hitherto provided so adequately for control. It will not be possible, under the New York law, for example, for a holding association such as the New England Gas and Coke Company to secure control of the local utilities while remaining outside the jurisdiction of the commission. But to prophesy the final outcome of the experiment would now be hazardous. May it demonstrate the capacity of the public servants when charged with great responsibilities and judged by the rigorous standard of results achieved, to render public service efficiently. The Public Service Commission in New York City has a distinct opportunity to set a new standard for public service in that city. Every pragmatic test will be applied to its achievements. It is a matter of public congratulation, however, that the commission, in pursuance of the law which created it, has adopted the principle of basing its actions not on guesses or expediency, but on facts secured through scientific inquiry. If the example of the commission results in the adoption of the *method* of *intelligence* in other departments of public business, there will be slight grounds for discouragement, even if regulation does not prove a final solution of the public service corporation problem.

DEVELOPMENT OF TRANSIT CONTROL IN NEW YORK CITY

By Henry C. Wright,
Secretary City Club of New York.

The aim of this paper is to show the various efforts that have been made to regulate the street railways in New York City and the effect of these regulations on the operation and finances of the companies.

The first grants made by the city were very simple. They consisted merely of a permit to lay tracks and operate cars. Such was the nature of the first franchise issued which authorized the New York and Harlem Railroad to operate a steam road in Fourth Avenue from Twenty-third Street north to the Harlem River. Up to this time, 1831, there was no general railroad act, because there had been no previous applications which might have prompted such a law.

1850 to 1860

Nor was one passed until 1848. Even this made no mention of street railroads. Nevertheless the Common Council proceeded to act as though such powers had been delegated to it, and between 1850 and 1853 it granted several franchises. The validity of these grants was soon questioned. As a result the legislature in 1854 passed an act validating them, and giving power to the Common Council to make grants, providing the consent of a majority in interest of the owners of property abutting the proposed line should have been previously secured. Public notice by publication was also required of the time and conditions of the proposed grant. Though this publication was not in terms a public sale, yet it opened the way for competitive bids. Under this authorization the common council continued to grant franchises until 1860.

The conditions of these council grants were very simple. The company was given the right to lay tracks and operate cars in certain designated streets without limit as to time. Subsequently the companies have interpreted this limitless grant to be a perpetual right, and have accordingly leased their lines for various periods from 100 to 999 years. However, no New York court has passed upon the particular point as to whether such grants are *de facto* perpetual. Though most of the grants were made without time limit, yet partial exception was made in the case of the Sixth Avenue and Eighth Avenue roads. In their grants the following provisions were inserted:

> They shall file with the comptroller a statement under oath of the cost of each mile of road completed and agree to surrender, convey and transfer the said road to the corporation of the City of New York whenever required so to do, on payment by the corporation of the cost of said road, as appears by said statement, with 10 per cent advance thereon.
>
> That said parties on being required at any time by the corporation, and to such extent as the corporation shall determine shall take up, at their own expense, said rails or such part thereof as they shall be required, and on failure to do so in ten days after such requirement the same may be done at their expense by the street commissioner.

This is the first instance of a revocable street railway grant in the city, and in fact the last. Though it is a form generally considered to-day to be the most desirable, it has not been resurrected since those early days. But recently the Metropolitan Street Railway Company proposed a draft form of ordinance designed to limit the number to be carried in a car to sixty-five. This form of regulation was somewhat anticipated by the following provision put in the grant to the Broadway Railroad:

> Cars shall be so constructed as not to make provision intended for standing passengers to crowd upon the seated passengers, and also when all the seats are full the cars shall not be stopped to take in more passengers to be crowded into the said seats, a flag being displayed in front of the car to give notice that all the seats are full.

These instances of attempted regulation were sporadic and evidently were not taken seriously, as they were not obeyed and no attempt was made to enforce them.

The compensation to the city at this time was upon the basis of a car license. The usual amount designated was $20.00 per car per year. In 1858 a general ordinance was passed providing that

> Each and every passenger railroad car running in the City of New York below 125th Street shall pay into the city treasury the sum of $50 annually for a license, a certificate of such payment to be procured from the mayor,

> except the small one-horse passenger cars, which shall pay the sum of $25 annually for such license as aforesaid.

A certificate of such a license was to be hung in each car. A failure to comply with this requirement was subject to a fine of $50.00. The requirement that the car license be hung in view of the public was not obeyed and varieties of excuses were found for not paying the charge. To such an extent has this tax been evaded that the company in Manhattan to-day owes the city not less than $290,000 for its unpaid licenses.

In some grants certain headways for the running of cars were required, demanding, for instance, a schedule of not less than one car every four minutes in the early evening hours. A stipulation that not more than a five-cent fare be charged was inserted in most of the grants, and this seems to be about the only requirement of the franchises that the companies lived up to. In 1855 the legislature created a state board of railroad commissioners with power to investigate the cause of accidents, pass upon the by-laws, rules and regulations of railroad companies, to require special reports, and to inspect all books and papers of such companies. After two years of existence the board was abolished because its powers were too drastic and it served no useful purpose.

The chief characteristic of this decade from 1850 to 1860 was the granting of franchises by the local authorities and the imposition of a car tax showing that the franchise was considered of some value.

1860 to 1875

In 1860 an act was passed providing that all street railway franchises should be granted by the legislature. This act remained in force until 1875. During this period the legislative grants usually contained the following provision:

> Said railroad shall be constructed on the most approved plan for the construction of city railroads, and the cars run as often as public convenience shall require, and shall be subject to such reasonable rules and regulations in respect to streets, in the transportation of passengers and freight in suitable cars, as the New York City Common Council may from time to time by ordinance prescribe, and to the payment to the city of the same license fee annually for each passenger car run thereon as is now paid by other city railroads in said city.

Though the common council was empowered to pass ordinances regulating the handling of cars, they exercised this privilege to a very limited degree in this period. In fact, there are but three general ordinances of any note to be found. One required that all cars should be provided with headlights; another that snowploughs could be used only by permit from the mayor and when used the snow thrown up by them must be removed; the other created the position of inspector of city railroads. One might infer by the title that such an officer would have been given considerable power. His only function, however, was to inspect the pavement laid along the tracks of the street-car companies.

The local authorities in that period advanced but very little in the regulation of street-car companies. On the other hand, the legislature made considerable progress. The basis of compensation was changed from that of a car license which prevailed between 1850 and 1860 to a portion of the receipts. From 1860 to 1872 the grants prescribed that 5 per cent of the *net* receipts should be paid yearly. Thereafter the basis was changed to a percentage of the *gross* receipts. In most cases it was stipulated that during the first five years of operation 3 per cent of the gross receipts should be paid; thereafter the payment was to be 5 per cent. This change from the basis of *net* to that of *gross* receipts is worthy of note. In a few cases provision was made that grants should be let to the highest bidder on the basis of a lump sum paid for the franchise.

In 1871 a franchise was granted to the New York Railway Company to build an elevated structure on the East Side, and in its grant was a provision that all trains between the hours of 6 and 8 a. m. should contain two cars of a capacity of forty-eight seats in which a fare of not over five cents should be charged. Since the usual charge on the line was more than that amount, the provision was an early recognition of a regulation which is to-day generally used in England, viz., a lower fare for workmen.

1875 to 1884

In 1875 the new state constitution provided that no franchises for street railways could be granted by the legislature except under a general street railway act. The consent of the local authorities was also required. The legislature, however, did not pass a general act of such a nature until 1884. As a result no grants were made in the following period of nine years.

Though the Common Council made no new grants, yet it manifested a slight tendency to attempt to regulate the operation of the roads. We complain to-day when the temperature in our electrically-heated cars falls below 60°. Such dreams of comfort were not entertained in those days. They were fortunate if the Board of Health enforced the ordinance passed by the Common Council directing it to require of the railroad companies "That clean straw be provided for the floor of every car," in lieu of any artificial heat.

In 1877 the council gave a permit to the Third Avenue Railroad Company to experiment with steam motor power with five cars. As a condition of such permit it was required that "all cars so used experimentally on said railroad shall contain a certain number of separated seats, and when all are occupied, said cars shall not stop to take up any passenger until one or more seats shall be vacated. When all the seats are occupied a placard shall be placed in a conspicuous position on the outside of the car, inscribed with the word 'full.' When vacancies occur it shall be taken down by the conductor." No historian has recorded whether any of these cars ever acknowledged itself to be "full." Within the memory of the present generation they have chronically been in that questionable state without even an outward placard of acknowledgment.

An important act, however, was passed in 1875, which was the forerunner of our present rapid transit act. This act empowered the mayor to appoint a commission of five to be known as the Commissioners of Rapid Transit. Their function was to "locate the route or routes of all steam railroads in the city." This included elevated and tunnel roads. In 1882 commissioners appointed under this act recommended that certain roads be built, but inasmuch as they provided no compensation to the city, the mayor disapproved the recommendation. The ordinance subsequently passed was amended to require 5 per cent of the yearly dividends. Various Commissions were appointed between 1875 and 1891 who recommended many different routes, but no roads were built under their authority.

In 1882 a State Board of Railroad Commissioners was created, designed to be an investigating, reporting and regulating body. It was given the power to investigate the operation of the railroads and their accidents; to prescribe the form of report to be made to the state; to order repairs, additions and rolling stock, extra facilities, rates of fare, and mode of operating the roads. None of these orders, however, could it enforce. Its power was confined to "presenting the facts to the attorney-general for his consideration and action." The board accomplished little other than the publication of financial reports of the various companies—reports which in many cases were gross misstatements and erroneous on their face. Such discrepancies, however, seemed never to be noticed by the commissioners. The board operated as a protection to the railroads rather than as a corrective body, by permitting stock and bond watering, and by restraining attempted legislation that it did not recommend. These functions it retained with no important amendment until it was supplanted by the public service commissions in 1907.

In the period from 1875 to 1884 no new franchises were granted, and the council passed very few ordinances designed to regulate the operation of roads then existing. Practically no advance was made either in the conception of the proper terms on which a public franchise should be granted or in the demands made upon the companies holding franchises.

1884 to 1891

In 1884 a general act was passed providing for the incorporation of street railway companies. The act provided that the consent of the local authorities must be obtained, as well as the consent of the owners of one-half of the abutting property; that ample notice of the intent to issue a franchise must be published; that payment of 3 per cent of the gross receipts for the first five years and 5 per cent thereafter should be required. The local authorities were empowered to make reasonable regulations as to the mode of use of the tracks.

Following the act several companies were incorporated and began to build lines. In the franchises of each of these companies was the provision that they should be subject to the regulation of the local authorities, and in addition to paying the highest price bid at public auction, they were to pay 3 per cent of the gross receipts for the first five years and 5 per cent thereafter as prescribed by the law of 1884.

This was a very decided advance in the requirements of a franchise. Had these requirements been lived up to the city would have received a fair return and would have secured reasonably good service through regulation of ordinances. The local authorities, however, since that time have received but a small portion of the required percentage of the gross receipts, and such ordinances as have been passed almost totally failed to secure an adequate service.

That a clearer view of the value of a franchise and of the rights of the people began to develop at this time is indicated by the conditions inserted in the grant made to the Ninth Avenue Elevated Railroad. It required, that

> In pursuance of Section 9 of the act aforesaid, it is directed that the said constructing company, or its successor, shall, in the month of January in each year, and quarter-annually thereafter, pay to the comptroller of the City of New York 5 per cent of its net income, for the purpose of being expended in the improvement of the condition or appearance of the streets, or parts of streets or avenues, or places through which elevated railroads may hereafter be located, or constructed, by demonstrating the practicability of making said structure more ornamental in appearance, and by introducing such new or improved methods of operating the same as may tend to obviate such objectionable features thereof as injuriously affect the condition of such street or avenue.

It was evidently recognized that the elevated structure then built, and still existing, was not ornamental but was even objectionable in many regards, and it was supposed that a means was being provided by which a fund would accumulate that would permit of experiments which would obviate the defects. Unfortunately, however, the law provided that the company should pay to the city a percentage of its *net* receipts, supposing, of course, that there would be *net* receipts. But, sad to relate, not since that day have any *net* receipts been discovered, so the experiments have never been tried, and we are still subject to the nerve-racking noise and the crudity.

1891 to 1907

In 1891 a law was passed called the Rapid Transit Act. It provided that five commissioners should be appointed by the mayor. These commissioners were authorized to select routes and prepare plans for rapid transit roads and to let to the highest bidder. The board was free to prescribe the terms and conditions of sale, except that the franchise should be "for a definite term of years" at the discretion of the board. No power of regulation was granted to this board, and the only condition in the act designed to regulate service provided that the company "shall furnish sufficient accommodations for the transportation of all such passengers and property as shall within a reasonable time previous thereto, be offered for transportation at the place of starting and at usual stopping places." No franchises were granted or roads built under this board. It became evident that to be effective the act needed much amending.

In 1894 the Rapid Transit Act was amended and took a form which in its chief points remained the law until 1906. The five commissioners appointed by the mayor in the former act were supplanted by a board of eight, three of whom were to be ex-officio, the mayor, the comptroller, and the president of the Chamber of Commerce. The remaining five were named in the act—leading business men of New York City whose integrity and ability were unquestioned. They were intrusted also with the function of filling any vacancies occurring in the board, so that it became a self-perpetuating body.

This method of creating the board established a new precedent. Though its functions were purely local, yet its personnel was dictated by the legislature. Much remonstrance arose at this interference by the state body, both on the part of those who really believed in good government but yet held to local autonomy, and from those who were deprived of the patronage this board could furnish. Others, however, who firmly believed in local control, yet felt that a board whose acts would affect not only the present generation but future ones also, should be removed as far as possible from the influence of politics, regardless of the demands of theoretical democracy.

The period for which a lease could be given was no longer left to the discretion of the board, except within narrow limits. Provision was made that the maximum period of such lease should not be more than fifty, the minimum not less than thirty-five years. No doubt these limits were prompted by the idea that reliable capital could not be induced to invest for a less period than the maximum named, and that bidders who might be willing to accept a lease of less than thirty-five years would not prove satisfactory or safe.

As an additional inducement to capital it was provided that the investment under the lease should be exempt from taxation. A condition was also inserted that a contract should be let only to the person who would construct, equip and operate. The motive for this provision no doubt was the feeling that if the person who was to equip and operate were to construct, it would guarantee a speedy and economic carrying out of the building of the line. The inference was proven to be well founded when the present subway was subsequently constructed. It was finished and put in operation in what was record time for so large an undertaking.

Provision was also made for submitting to a vote of the people the question of the advisability of the city's constructing a specific road which had been decided upon by the board. This applied to New York City as then constituted, consisting of Manhattan and a part of The Bronx. On consolidation the vote was declared to be effective in the enlarged city. At the next general election the following questions were placed upon the ballot: "For municipal construction of rapid transit road" and "Against municipal construction of rapid transit road." By a large majority it was declared to be the will of the people that the subway should be constructed by the city. The vote, which was on the question of the construction of a specific subway, later came to be interpreted as a vote for municipal construction of all rapid transit roads.

In case the city's money were to be used, it was provided that the contractor should pay as rental to the city for the use of such road an annual rental equal to the interest on the bonds issued by the city and in addition, one per cent was intended to be set aside as a sinking fund which would produce a fund nearly sufficient to retire the bonds at their maturity.

Authority to provide for the welfare of the traveling public was given the board. They could let the contract "upon such terms and conditions as to rates of fare to be charged and the character of service to be furnished and otherwise as said board shall deem to be best suited to the public interests, and subject to such public supervision and to such conditions, regulations and requirements as may be determined upon by said board." Conditions as to service and supervision then became a matter of contract between the operator and the city.

Simultaneously with this advance in the provision for rapid transit roads occurred a movement for consolidation of the many surface lines. William C. Whitney, Thomas F. Ryan, and P. A. B. Widener began, in 1892, through the formation of the Metropolitan Traction Company as a New York State corporation, to create a monopoly of the surface lines in New York City. They obtained the Houston Street road, which was used as the basis of their company. To it they leased such roads as came into their possession. In 1894, the year the amended and modern Rapid Transit Act was passed, they formed the Metropolitan Street Railway Company. The following year they reported to the state railroad commission that they owned 38.29 and leased 101.46 miles of the 275 miles of road then existing in New York City. To-day the company owns or has control by lease of all of the lines in Manhattan.

During this consolidation a movement was put on foot to revise the charter of the city. This resulted in the enactment of a new charter by the legislature in 1897. At the same time the greater city was created. In this charter was inserted the provision that all franchises for surface roads should be granted by the city and for a term not exceeding twenty-five years, at the expiration of which the property in the street should become the property of the city. To further safeguard the letting of franchises a bicameral board was created, both branches of which should pass upon proposed franchises. This was further guarded by the requirement that the Board of Estimate and Apportionment should pass upon its terms. The latter board was composed of the mayor, president of council, president of the department of taxes and assessments, and the corporation counsel,—a body supposed to be conservative by its make-up and familiar with the needs of the city. Before final action could be taken upon any franchise its terms must have been advertised for at least twenty days, and a three-quarter vote of each house required. To override a veto by the mayor a five-sixths vote was necessary. Under this arrangement but two franchises were granted, which were much superior to any heretofore granted by the city.

The bicameral board was abolished in the revised charter of 1902, and the present board of aldermen substituted for it. The power of passing upon a franchise, however, was transferred to the new board, which proceeded to use its new power in an obstructive way. The Pennsylvania Railroad sought the right to build a connecting railroad between the New Haven Railroad and its lines extending into Long Island City. The Board of Aldermen held up the grant for reasons best known to an inner circle of that body. As a result of this hold-up its power to pass upon franchises was taken away from it by the legislature of 1905 and couched in the Board of Estimate and Apportionment only, where it remains to-day.

The Board of Rapid Transit created in 1894, did not succeed in contracting for a subway until 1901, when it granted a lease to John B. McDonald, who transferred his right to the Interborough Rapid Transit Company. Under this contract the city furnished the money, $35,000,000, with which to build the subway. The contractor provided his own equipment. He was given a lease for fifty years with a renewal of twenty-five years, during which time he agreed to operate the road according to the highest known standards of railroad operation, and to furnish the public adequate accommodation up to the capacity of the road. If he failed to live up to this agreement his contract could be annulled.

The subway was completed and put in operation November, 1904, and from the very first it became congested. Though its method of operation was of the highest standard, yet not enough trains were operated to supply the needs of the public. The people grew restive because they felt the Board of Rapid Transit should compel a better operation. The power which they had under the contract was not used to secure adequate service. In addition to this inaction on the part of the board no more subways were put under contract. The explanation was that the present operating company did not then desire to build more subways and no other companies had manifested any such desire.

The sentiment of the people at this inaction crystallized in the form of a bill introduced into the legislature in 1906 known as the Elsberg bill. It provided that the term of a lease should not be more than twenty years with a renewal of twenty years, and that contracts for construction, equipment and operation could be let separately or jointly at the discretion of the board; or the city could build and operate. The bill became law. The sponsors of the law hoped that by permitting the city to build a subway and then to lease it for operation, there would be live competition among bidding operators. It was soon discovered that the city had so nearly reached its debt limit that it could not undertake extensive subway building and private capital could not build according to the interpretation put upon the referendum vote of 1894. As a result during the next year no new roads were put under contract, and there seemed little prospect that the next few years would change this stalled condition.

The foregoing gives in merest outline the stages of attempted legislative control from 1850 to 1907. There now remains to be told the effect of these various attempts on the management of the roads.

Finances

The State Railroad Commission came into existence in 1882, and, among other functions, it was directed to supervise the financing of railroad companies. Before additional stock could be issued or bonds placed out, application for such permit must be made to this commission. This supervisory power was supposed to extend to an examination of the status of an applying company, and an examination as to its need for the prayed-for issue, and its ability to retire the bonds and to pay dividends upon the stock. Subsequent to such issue the commission was directed to ascertain whether it had been spent for the object specified in its application for the issue. The theory of this regulation was good; the practice may be judged by some of the figures which follow.

In 1886 the total outstanding liabilities, including capital and funded debts, of the surface lines of the city were $35,486,923. Between this date and 1896, all of the lines remained in practically the same condition except the Broadway and Seventh Avenue and the Third Avenue line. On these two lines 22.56 miles of single track were transformed from horse to cable power. In addition 15.40 miles of cable were built on the Lexington Avenue and Pavonia Ferry line. During the last year of this decade also the first electric line in the city was built on Lenox Avenue from 116th Street to 146th Street, being about 3.62 miles of single track. The transformation from the horse to the cable line may be assumed to have cost as much as laying a new road. The counsel of the Third Avenue road stated before a committee of the New York Assembly in 1895 that the cable road in Amsterdam Avenue cost about $50,000 per mile of single track. Assuming this to be a fair estimate of the cost of such construction, on this basis 37.90 miles of cable track laid since 1886 cost $1,895,000. The laying of an underground electrical system costs somewhat more than a cable road. The receivers of the Third Avenue railroad on March 7, 1908, applied to the United States Circuit Court for the authority to expend $277,305 for the electrification of 6½ miles of horse-car track from 59th to 125th Street on First Avenue, which would be at the rate of about $42,600 per mile. This does not include power-house or equipment expenditure. An article in the "Street Railway Journal" in December 1897, stated that according to the estimate of the engineers of the system, the Madison Avenue line cost not far from $100,000 per mile to electrify. At this latter rate the 3.62 miles electrified in this period would have cost $362,000. The cable and electrical transformation of the decade cost $2,257,000. In addition to the above the Thirty-fourth Street line was built, consisting of 1.62 miles, operated by horse, costing not more than $32,400. A few new cars were purchased and some rails renewed, which in the aggregate probably would have been covered by a few hundred thousand dollars. If we assume the total expenditure for improvements to have been $5,000,000, the increase in indebtedness during the decade should not have been more than this amount. We find, however, that it had actually increased from $35,486,923 to $76,266,810, or an increase of $40,779,887. The greater part of this increase of indebtedness occurred after 1892, when the Ryan-Whitney-Widener onslaughts began.

Between 1896 and 1906 the only new lines built were horse lines on Twenty-eighth and Twenty-ninth Streets, and also on Fulton Street, a total of 6.76 miles, costing perhaps $140,000. The chief improvement was electrification of old lines. In all 165.74 miles of single track were transformed from either horse or cable to the underground contact system. The cost of this improvement, estimated at $100,000 per mile for 127.78 miles of horse track, was $12,778,000, and of 37.96 miles of cable track where the conduits were already built, at $60,000 per mile, was $2,277,600, or a total of $15,195,000, including the new lines. This includes the cost of power houses.

According to the 1906 report of the State Railroad Commission the total number of electric cars in Manhattan was 3,379. The cost of these cars varies from $2,500 to $3,500. A valuation of

$3,000 would be a liberal estimate for the type of cars in use. Assuming that 4,000 were purchased at this price, the cost would have been $12,000,000, which, added to the cost of electrification of the roads, makes the total expenditure for improvements during the decade $27,195,600. Lest we have omitted some expenditures that should have been included, let us swell this figure to $35,000,000 as the total outlay for the period. This, added to the total liabilities reported in 1896, should make the indebtedness in 1906, assuming none had been paid off, $111,266,810.[1] On examining the reports of the companies in the 1906 report of the state railroad commission, we find that they place their total outstanding liabilities not at this figure, nor at any figure approximating it, but at $234,342,823, an increase above a most liberal estimate of nearly $125,000,000. Some details of this marvelous increase of indebtedness will be of interest. The Thirty-fourth Street crosstown line, which has a length of somewhat less than a mile, to be accurate, .952 mile, cost not to exceed $25,000. During this period it was electrified at a cost within $150,000. At a liberal estimate the road, with all of its improvements, could not have cost to exceed $200,000, yet we find it saddled with a debt of $6,472,287. The Fulton Street horse-car line, which is one mile in length, and cost possibly $25,000, a line which still uses horses as motive power, now has an indebtedness of $2,553,097. This is a fair sample of the increases which go to make up the total swollen indebtedness of $125,000,000 beyond a reasonable estimate of the cost. It is needless to remark that this amount of money has not been expended on these roads, nor has it been accounted for.

Nor is the full story told. While all this money was disappearing little of it went toward payment to the city for franchises and car licenses. To-day the city claims that the street-car companies owe for these items not less than $13,000,000.

Accidents

In 1896, it will be recalled that there were about thirty-eight miles of cable road, less than four miles of electric road, and the remainder horse track. That year there were reported but fifteen killed, including employees, passengers and others. By the same lines in 1906 the number of killed was eighty-seven. A part of this increase was to be expected, owing to the greater speed of electric cars and the larger number of people in the city. Its multiplication by six, however, at once suggests a gross carelessness on the part of the operating company and a neglect of well-known safeguards. Fenders have been removed from practically all cars in Manhattan and nothing in the form of a dash protection or of an adequate wheelguard has been substituted, though in some other cities such have been in successful operation for years.

---

[1] Since writing the above Mr. William M. Ivins, special counsel of the Public Service Commission, in a paper read at the City Club on March 16th, estimated that the whole Metropolitan System could be replaced or rebuilt at a cost of $106,500,000. This includes 206 miles of trolley road in The Bronx, not included in the above estimate of the original cost of the system in Manhattan.

Equipment

The wiring of the cars and motors had been so neglected that an unwarranted percentage of the cars in operation daily were run back to the barns because of burnouts or other injuries which put them out of service, indicating a serious neglect and gross mismanagement. Flat wheels were annoyingly frequent. Many inquiries from conductors and motormen failed to discover one who knew of any of the cars having been washed. The paint on the cars was so old that the public ceased to look for a new dress and contented themselves with any vehicle which would carry them, no matter how unsightly.

Operation

The orders of the state railroad commission or the ordinances of the board of aldermen had little if any effect in securing adequate service on the surface lines. During rush hours just enough cars were operated to carry the people with no attempt to furnish seats. A count made by the City Club on June 17, 1907, of the cars and passengers on the Madison Avenue line revealed the fact that between 5.30 and 6.30, 5,000 passengers were carried in eighty-five cars with 4,134 seats, or an excess of 1,326 passengers over seats. On the Twenty-third Street line a similar condition was found. For 3,728 passengers 2,864 seats were provided during the same hours. Other lines were similarly congested. As an answer to this complaint the company claimed that the tracks would accommodate no more cars.

The subway, which was under the supervision of the Board of Rapid Transit, was doing but little better. During the rush hours on the express tracks but twenty-seven trains per hour were being operated, carrying 25,413 passengers and furnishing but 11,232 seats. Even on Sunday, when there was no possible excuse for not operating more cars, 13 per cent of the passengers were made to stand. This condition existed in spite of the fact that the company was under contract to furnish the best accommodations possible up to the capacity of the tracks. The Board of Rapid Transit was not compelling the company to carry out its contract.

The congestion problem at the terminals of Brooklyn bridge had for a long time been almost unendurable. This was largely owing to the fact that the company in Manhattan was very jealous of any encroachment by the company in Brooklyn. In the meantime the Commissioner of Bridges had supervision of the operation of cars over the bridge, and through his chief engineer he fostered rather than attempted to relieve this congestion. Though more passengers were carried per mile of road than in any other city in the United States, yet there still remained over eighty miles of horse-car track with the most antiquated cars.

In short, the general policy of the operating companies was to reduce the operating expense to the lowest point possible and still keep sufficient cars going to transport the passengers. The city which could afford the best of transit service because of its dense population, and which needed the best because of the hundreds of thousands of strangers constantly within its borders had in fact, a service scarcely exceeded in the United States for its shortcomings.

Such was the condition when Charles E. Hughes took his seat as Governor of New York State on January 1, 1907. In his message transmitted to the legislature on that day, he emphatically called attention to the need of legislation designed to secure a better supervision and control of public service corporations. A bill was drafted, largely under his supervision, to accomplish this purpose. It at once attracted the keenest attention from civic workers, business men and public service corporations. Several hearings were held before the committees having the bill under consideration at which the ablest lawyers in New York appeared on behalf of these companies. To the surprise of everyone the attitude taken by these corporations was different from that assumed at any former time. There was apparently no effort to influence the legislature by money or other inducement; on the contrary, they plainly stated that they thought the time had come when the people demanded some such legislation. Their only endeavor was to amend the pending bill so as to make it as weak as possible. Even this mild attempt, however, was ineffective. The governor appealed to the people and the legislators passed the bill in the form approved by him.

The powers conferred by this law are probably greater than have ever before been placed in the hands of any state or federal commission dealing with public service corporations. One corporation representative, before the bill was passed, expressed the hope that companies might still have the privilege of selecting the color for their cars. It is not quite so dominating as his remark might lead one to think, yet it does control to a degree unknown before.

The law provided for two commissions of five members each, one to have jurisdiction in the counties comprising New York City and the other in the remainder of the state. Their jurisdiction extends over all common carriers, including express companies, and over gas and electric companies. It is highly probable that the legislature of 1908 will place telephone and telegraph companies under their jurisdiction. These were omitted in the first law only to reduce the opposition that would be brought against the bill.

For the purpose of this paper the powers which apply to street railroads only will be described. In defining a street railroad company the law uses these words: "The terms 'street railroad corporation,' when used in this act, include every corporation, company, association, joint-stock association, partnership and person, their lessees, trustees or receivers appointed by any court whatsoever, owning, operating, managing or controlling any street railroad or any cars or other equipment used thereon or in connection therewith." This seems to leave out of consideration the holding company, but in the body of the bill these words are found: "No stock corporation of any description, domestic or foreign, other than a railroad corporation or street railroad corporation, shall purchase or acquire, take or hold, more than 10 per cent of the total capital stock issued by any railroad corporation or street railroad corporation or other common carrier. . . ." By this the holding company of whatever form is placed under the jurisdiction of the commissions. The law provides that the commissions shall have control over all receivers by whatever court appointed. Unfortunately, however, the federal law is supreme, and when the United States Court appoints a receiver, as it has done for the New York Railway Company, he need not obey the order of the state commission.

The commissions are empowered to hold hearings on any complaint, or to initiate any inquiry; they may summon witnesses under oath, and no witness need be released from the duty of giving evidence on the ground that it will tend to incriminate him. This enables the commissions to secure any evidence which may be of value to them, unless, perchance, evidence has been destroyed, as were the books of the Metropolitan Company after its lease to the Interborough.

The old state railroad commission required that all accidents be reported. Accordingly, at the end of the year, among other things, a little table was presented, giving in total, merely, the number killed and injured. The new commission requires that all accidents shall be reported "immediately." By interpretation this means that as soon as an accident is reported to the office of the transit company it shall be forthwith telephoned to the commission, in order to enable them to investigate it at once. The necessity for such a provision may be better understood when we know the startling number of accidents caused by car lines. In twenty-seven days there were 5,500 accidents: 42 killed, 10 skulls fractured, 10 limbs amputated, 44 limbs broken, and 83 passengers otherwise injured. The railways in New York City kill, on an average, over one person a day and injure many times more than that.

The power of the commission is not confined to an examination of the things done by the railroad, but it "may investigate or make inquiry in a manner to be determined by it, as to any act or thing done or omitted to be done. . . . ." So it does not wait for complaints, but sends its investigators out to ascertain whatever shortcomings may be discovered.

It may be asked: Suppose the commission does find the service deficient, and suppose on examination it is discovered that the company has not enough cars, or that they are not in shape to be operated, what can be done about it? The old State Railroad Commission could order on more cars, which order the companies would ignore. Then the only recourse was to have a suit brought by the attorney general, compelling them to obey. These suits, however, were never brought, so the orders were never carried out. The power given to the present commission regarding service reads as follows: "And whenever the commission shall be of opinion, after a hearing had upon its own motion or upon complaint, that the regulations, practice, equipment, appliances, or service of any common carrier, railroad corporation or street railroad corporation in respect to transportation of persons, freight or property within the state are unjust, unreasonable, unsafe, improper, or inadequate, the commission shall determine the just, reasonable, safe, adequate and proper regulations, practice, equipment, appliance and service thereafter to be in force. . . . ." If the company fails to obey any order when given, it is subject to a maximum fine of $5,000 for each and every offense, and "every violation of any such order or direction or requirement of the act shall be a separate and distinct offense, and in case of a continuing violation, every day's continuance thereof shall be and be deemed to be a separate and distinct offense." It will thus be seen that the penalty is sufficiently large to prompt obedience, and multiplies itself by each day of its continuance. The power of applying the penalty thus lies in the hands of the commission—the ordering power. Likewise the commission can order any repair needed for the safety or convenience of passengers in "any tracks, switches, terminals, or terminal facilities, motive power, or any other property or device used by any common carrier. . . ." It can issue orders for any number of extra cars, or establish the schedule upon which they shall be run.

Not only can no railroad be constructed without the consent of the commission, but no franchise or right shall "be assigned, transferred or leased, nor shall any contract or agreement with reference to or affecting any such franchise or right be valid, or of any force or effect whatsoever, unless the assignment, transfer, lease or contract or agreement shall have been approved by the proper commission." This power readily controls the disposition of franchises so that they cannot be secured simply to keep others out of the field or to sell at a profit. No longer need the legislature blindly pass laws as to the rate of fare, since the commission can, after painstaking inquiry, establish what it considers a just and reasonable rate for the transportation of passengers.

The day is passed when a Ryan or a Whitney or a Widener can double or treble the liabilities of a transit company. Hereafter no company can issue stocks, bonds, notes or other evidences of indebtedness without the consent of the commission. Such power on the part of the commission, however, would not be very effective unless they could ascertain with definiteness just the present financial condition of the applying company. This power is given them. The law provides that "the commission shall at all times have access to all accounts, records and memoranda kept by railroad and street railroad corporations, and may prescribe the accounts in which particular outlays and receipts shall be entered. . . . ." This power to designate the form in which books shall be kept and the right of subsequent inspection enables the commission not only to act wisely in the regulation of fares and on the application for an increase of indebtedness, but also enables it to fix the terms and conditions of franchises with fairness both to the people and to the companies.

Everyone was alert to see the type of men the governor would appoint as commissioners to be entrusted with the great power of this new law. The former Rapid Transit Commission was composed of men of the highest standing in the business world, and most of them were independently rich. If he were not to appoint men who had proved themselves a success in business, then whom could he select sufficiently experienced to give wise judgments? This question was the question universally asked. Such questions were soon answered by the announcement of his choice. The five men comprising the commission of the First District,—New York City, with which this article deals, were as follows: William R. Willcox, chairman, formerly postmaster in the city for a little over two years; Milo R. Maltbie, who is known as a writer on and investigator of municipal subjects; William McCarroll, a business man; Edward M. Bassett, ex-congressman, and John E. Eustis, formerly park commissioner in The Bronx. None of these were of the class of so-called big business men. But one of them, Mr. Maltbie, had any special knowledge of municipal transit, and none of them had gained any special knowledge of the inner operation of public service corporations. The public was unaccustomed to such appointments by a governor, and the newspapers were at a loss to know how to treat the appointments editorially. The essence of all the expressions was, "Well, we will hope for the best."

These men, at this writing, have been in office eight months. Let us see whether the governor was justified in his choice, and whether the law is proving effective.

Their first problem was to get together a working force both for office and for field work. Inasmuch as most of these had to be secured through the state civil service, and an eligible list had not been prepared for this purpose, they were greatly hampered in procuring the needed men. Regardless of this fact they went to work endeavoring to do what could be done by means of public hearings and a small force. Special counsel William M. Ivins was employed to examine into the operations and financial conditions of the transit companies. These hearings continued more or less regularly until October, when it seemed best to discontinue them on account of the financial panic. In the meantime, however, the current rumor of the watered condition of the companies was proved to be based on fact, and the people first authoritatively learned the extent of this inflated capitalization to which they were paying tribute by their nickels. Much other valuable information was obtained as to the history and relation of the companies, their method of operation, schedules, etc. It was in a sense a synoptical view of the situation which showed the commission the direction in which to move and the first things that ought to be accomplished.

Hearings upon specific complaints were simultaneously begun. The method of handling these hearings was to investigate the conditions complained of, and if they were, in the opinion of the commission, such as should be corrected by the company, thereupon a preliminary order was issued to the company to show cause why they should not make certain changes specified in the order. Usually several hearings would be held upon such an order at which the commission would record its observations and the company make answer. If the commission became convinced that the preliminary order could and should be carried out by the company, it was then made final and commanding.

These orders have covered a variety of shortcomings of the transit companies. The following are a few examples: The City Club had made complaint of the congested condition of the cars on various lines. An examination of the conditions complained of was made by the commission's inspectors, and were found to be substantially true. Hearings were held and the company was ordered to put on many more cars on various surface lines, which they obeyed. Similar observations were made on the elevated roads, resulting in orders for more cars, subsequently the required number of cars were run by the companies. Of orders increasing the number of cars on the elevated roads there have been six, all of which have been obeyed; on the surface lines nine orders which have likewise been obeyed. The surface cars of the Metropolitan Company were examined with great care, and as a result an order was given to put in good repair thirteen per day. The cars of a certain line crossing Brooklyn bridge were proved to be in such bad repair that they were constantly breaking down and delaying all other cars. All the cars of this line were ordered repaired. Additional station signs have been ordered on the Brooklyn Elevated Railroad stations. Certain lines in The Bronx that do not carry many passengers have been ordered to run enough cars and at such headway as to provide a seat for every passenger. Additional cars were ordered on the Madison Avenue line. The company made answer that the line at present was accommodating as many cars in the rush hours as could be run upon it, and, moreover, they could not get more motormen. A thorough examination was made by the commission of the capacity of this line, of the wages paid by the company, and of the average length of time the men stayed in their employ, with the wages given. When the company discovered that all this detailed knowledge was in the hands of the commission, they agreed to obey the order and the required additional cars were put in operation.

This is the first time the transit companies have felt obliged to obey the orders of anybody. Improvements have been made voluntarily before, but only when the degree of congestion reached the point of saturation. No attempt heretofore has been made to furnish seats to passengers. As long as there was room for an additional passenger to squeeze into a car, the number of cars has been considered by the companies to have been sufficient. The commission is now going on the assumption that a passenger should be furnished a seat if it is possible to operate sufficient cars. Although this ideal condition has by no means been reached at present, yet orders are given looking to that end, and eventually this heretofore unattainable accommodation may be realized.

The financial problem of the companies is a much more difficult problem to solve. The commission has power to restrain them henceforth from issuing more stock or bonds than are actually needed for the improvements of their roads, but how to handle the $234,000,000 of indebtedness of the surface lines of Manhattan, is a problem of much larger proportions. These lines cannot give adequate service and pay interest on their indebtedness and dividends on their stock. If these roads were capitalized at what it would cost to rebuild them, they could give a service better than that furnished by any lines in the United States and pay very attractive dividends.

The problem before the commission is to secure ample service for the public from the companies and yet at the same time protect, as far as may be reasonably possible, the stockholders who have been led blindly into the den of the transit robbers. The only line of action open to them seems to be to demand of the companies the needed service and let the marked-down value of stock and the receivers' courts solve the resulting situation.

There is general satisfaction with the results accomplished by the commission. Complaint, of course, is made in sections of the city that they have not put under contract more subways. Their action in this line, however, is restrained by two factors: First, confirmation is needed by the Board of Estimate and Apportionment, who have the power to appropriate money; second, the nearness of the city to the debt limit authorized by the state constitution. An effort is being made during the present session of the legislature to so amend the Rapid Transit Act as to permit the use of private capital for the construction of subways. At present, according to the interpretation put upon the referendum vote of 1894, only the city's money can be so used.

The question is often asked: Is there anything in this law that makes it automatically more operative than that under which the former state board of railroad commissioners acted? Does not the execution of the law depend entirely upon the character of men on the commission? They have much more power than the other board, but politics might enter in and so change the personnel of this commission that this power would not be exercised and little be accomplished under the law. This contingency may arise, and in fact the more nearly the present members do their duty the greater the likelihood that they will be displaced by some future governor who yields to the pressure from the corporations. The safeguard against this is that the people are exercising their power and rights as never before, and a governor who ventures to supplant any of the present members by tools of politicians will undoubtedly feel their wrath in no uncertain manner. There is no other assurance than this that the law will continue to be effective.

The powers of this commission as compared with the conditionless grants of the period of 1850 make a striking contrast. It has taken an experience of fifty years to make clear that the rights of the next generation are to be secured in the present. The remark of Oliver Wendell Holmes that the reformation of an individual must begin with his grandmother, is equally applicable to the finances of public service corporations. We must rectify the neglect of our forefathers as best we can—our present attempt is in the form of the Public Service Commission. It is full of promise. Only time will show whether its accomplishments measure with its tasks.

THE CONTROL OF PUBLIC SERVICE CORPORATIONS IN DETROIT

By Delos F. Wilcox,
Formerly Secretary of the Detroit Municipal League.

Detroit has maintained an attitude of belligerency towards the public service corporations longer than any other great American city. Chicago was still hopelessly under the control of Charles T. Yerkes and the "gray wolves" in the city council when Mayor Pingree signed the first three-cent fare ordinance in Detroit. Tom L. Johnson was in those days a street railway magnate himself. It was from Mayor Pingree that he took his first lessons in the philosophy of low street car fares. In Detroit, Pingree is still a name to conjure with. The spirit of resistance to governmental control by private corporations has shown unusual persistency in the City of the Straits.

My readers should duly appreciate the privilege which I am about to give them of perusing the substance of an "unpublished" street railway ordinance, recently adopted by the Detroit common council and signed by the mayor towards midnight, the publication of which was enjoined by the federal district court before dawn. This ordinance was designed by the warlike leaders carried into power on the side of popular indignation against the Detroit United Railway.

The status of street railway franchises in Detroit is not peculiar. The franchises owned by the Detroit United Railway for streets within the limits of the city expire at about a dozen different times. For 170.1 miles of single track owned by the company prior to the most recent annexation of suburban territory, the franchises expire as follows:

July 13, 1906, approximately	.8 miles
November 14, 1909, approximately	63.8 miles
June 17, 1910, approximately	3.8 miles
June 30, 1910, approximately	15.0 miles
December 31, 1915, approximately	15.8 miles
December 13, 1921, approximately	0.8 miles
December 4, 1924, approximately	59.6 miles

July 1, 1927, approximately	1.1 miles
May 14, 1928, approximately	2.7 miles
Sometime in 1934 (probably)	.5 miles
Claimed to be perpetual	5.3 miles

In 1907, with the annexation of the village of Fairview, on the eastern limits of the city, another franchise was "taken in" which had been granted only two years before for a period of thirty years. The various franchises now covering city streets were many of them originally granted by the town and village authorities of suburban districts which have since been annexed to the city.

Detroit is particularly fortunate among the cities of America in having a number of great diagonal thoroughfares leading to a common center. These naturally furnish the skeleton of the transportation system. On Woodland Avenue, the most important street of the city, is found the stretch of track where the company's franchise has already expired. This stretch of track is situated about three miles from the center of the city and a mile and a half inside the city limits. Most of the franchises on the main thoroughfares of the city expire in 1909 or 1910. About sixty miles of track are covered by a franchise running to 1924, the famous Pingree three-cent franchise. Over these sixty miles of street railway track, for the past thirteen years, transportation has been furnished at the rate of eight rides for a quarter from early morning till half-past seven in the evening, and at the rate of six rides for a quarter during the rest of the evening and the night.

One would naturally suppose, under such circumstances, that the city would be in a position to dictate terms to the street railway company. But all efforts to do so have hitherto been unavailing, principally because the city had no alternative under the constitution and laws of the state except to renew the company's franchises on such terms as the company was willing to give, or to grant a competing franchise to some other company on other streets.

The Hally Ordinance

The "unpublished" ordinance to which I have referred is known as the "Hally Ordinance," the name being derived from Mr. P. J. M. Hally, chief assistant corporation counsel and confidential legal adviser of the present administration. The terms of this ordinance are certainly novel and remarkable. *"On and after the acceptance of this ordinance,"* it runs, *"every street railway company, its successors or assigns, operating street railways in the City of Detroit, which operates any street cars on any street in which its right to operate streets cars has expired, shall operate all of its cars on all of its lines" upon the terms and conditions set forth in the ordinance.*

The first condition is that the operation of a single car on any street in which the operating company's franchise has expired "shall constitute an acceptance of the terms herein set forth." The ordinance provides a method for officially determining whether or not its provisions have been accepted by a street railway company. It is stipulated that the common council shall refer the matter to a committee, that five days' notice shall be given to the street railway company setting a time and place when the committee will hear evidence and an opportunity will be given to the corporation to be heard, and that upon the report of this committee the council shall "declare its findings." If the council declares "the fact of acceptance to be established, no other or further proceedings shall be necessary" to prove the acceptance.

The company accepting the ordinance in this manner is required to keep on sale on its cars at all times "tickets to be sold in strips or packages of five for fifteen cents;" each of these tickets is to be good for a single ride for any distance in either direction over the lines or roads operated or controlled by the company, and to entitle the passenger to a transfer good for a continuous ride over any connecting line or road operated, owned or controlled by the company. Cash fares are to be at the rate of five cents each. Passengers are to have the right to designate the point at which they desire to transfer. For two hours and a half in the morning, viz., from 5.30 to 8.00 o'clock, and for two hours in the evening, viz., from 4.30 to 6.30, the company is required to sell packages of tickets at the rate of ten for twenty-five cents, and such tickets are to insure the same privileges as cash fares or three-cent tickets.

The city is to do all the paving, both within and without the street railway tracks, but the company will have to keep its rails and roadbed in good condition, and keep the pavement between its tracks and for a space of eighteen inches on each side in repair until the street is repaved.

The company shall bind itself to change its routes at the request of the common council, and if any such change renders the tracks in any street unnecessary, to remove the tracks whenever directed so to do by the common council. Service, as to the kind and number of cars and the time between cars, is to be subject at all times to regulation by the council, "and the determination of this body shall be final and conclusive as to the regulations imposed." The company, during the enjoyment of its privileges in the streets, will be subject to such further rules or regulations as may from time to time be deemed necessary by the common council, and it is stipulated that the passage by the council of any such regulation shall be final and binding upon the company.

For the violation of any of the terms or conditions of the ordinance, the company will be required to pay into the city treasury the sum of $1.00 a day for every car run.

Any violation of the ordinance or failure to comply with its provisions, or with any further regulations imposed by the council, may also be punished by a fine of not more than $50, or in default of payment, by the imprisonment of the offender in the Detroit House of Correction for not to exceed three months. The company will continue to be subject to all ordinances, rules and regulations now in force in relation to the operation of street cars, except as modified by this ordinance. The property of the company, both real and personal, will be subject to taxation under the laws of the state. The corporation accepting the terms of the ordinance "shall continue to operate hereunder until otherwise ordered by the common council of the City of Detroit."

The company, when directed to do so, shall, from time to time, extend its service into territory that may have been annexed to the city, and shall perform the service upon the same terms and conditions that are binding within the city limits as they exist at the time the ordinance is accepted. The common council reserves the right to amend, alter or repeal the ordinance at any time.

Last summer, when Mayor William B. Thompson, after six months in office, had succeeded in getting the common council into a frame of mind where it was ready to pass the Hally ordinance, the bondholders of the Detroit United Railway applied to Judge H. H. Swan, of the United States District Court, for an injunction to prevent the common council from passing the ordinance, or the

Detroit United Railway from accepting it. Judge Swan was about to take his summer vacation, accordingly, he granted the injunction and tied the matter up for the summer. The city administration contended that it was not within the province of a federal judge to enjoin the common council from passing an ordinance. After many months' delay Judge Swan concluded that his action had been premature, and "lifted" the injunction. At the next meeting of the common council the ordinance was passed. The mayor stayed up that night to sign it, and the railroad attorneys and the judge stayed up still later to enjoin the city clerk from publishing it. Mayor Thompson and his advisers have been anxious that the "Hally Ordinance" should be tested on its merits. The preliminary injunction issued by the federal judge seemed to the city administration nothing but a wicked railroad scheme for delaying the main issue. Mayor Thompson will have to stand for re-election this year. He was elected in 1906 as a Democrat in a strongly Republican city on the promise that he would speedily secure lower street railway fares for the people. Anything that would delay his policies and make his administration barren of practical results would naturally tend to lessen his chances of re-election, tire out the people, and give the Detroit United Railway a better chance for getting favorable terms from the city.

Pingree's Municipal Ownership Plan

The street railway fight in Detroit has been an up-hill contest. The Detroit United Railway is one of the two great electric railway corporations of Michigan. In addition to its nearly two hundred miles of tracks within the Detroit city limits, the company owns and operates four or five hundred miles of suburban lines, running to Toledo, Jackson, Pontiac and other surrounding towns. When Hazen S. Pingree became governor of Michigan, after having been four times elected mayor of Detroit, he secured the passage of a bill by the state legislature authorizing the establishment of a street railway commission in Detroit, with power to purchase and operate the street railway system. This was in 1899. Mr. Pingree himself was appointed chairman of the commission. The Pingree commission at once entered upon negotiations for the purchase of the street railway lines. Professor Bemis, Professor M. E. Cooley and other experts were employed to make a valuation of the physical property and unexpired franchises within the city limits. The experts reported that the physical property of the company was worth approximately $8,000,000, and that the unexpired franchises were worth about $8,500,000. The company offered to sell for $16,800,000. The plan agreed upon was that the city should issue $17,500,000 bonds against the property, $700,000 of which was to be retained for making extensions and for other purposes. The bonds were to be taken by the then owners of the street railway system and were to be secured by a contingency franchise to operate for a period of forty-eight years in case the city defaulted on interest or principal. Excitement ran high, and the constitutionality of the street railway commission act was attacked in court. The supreme court of the state quickly handed down a decision ousting the commission, on the ground that the powers attempted to be conferred upon it by the legislature were incompatible with the provisions of the state constitution. In 1850, when the present constitution of Michigan was framed, the people were extremely anxious to put a check upon the activities of the state government in the matter of "internal improvements." Accordingly, a clause was inserted in the constitution adopted in that year to the effect that "the state shall not be a party to, nor interested in, any work of internal improvement, nor engaged in carrying on any such work, except in the expenditure of grants to the state of land or other property." The judges held that under this provision the Detroit United Railway system was an "internal improvement," and that, inasmuch as the state government itself could not lawfully take over such an enterprise, authority to do so could not be delegated to a municipality of the state. The court did not in this case specifically deny the power of the legislature to authorize a city to own and operate street railways wholly within the city's corporate limits, but ousted the commission because the act creating it assumed to give it jurisdiction outside the city.

Plans for Changing the Constitution

The plan of the Pingree street railway commission for municipal ownership having been thwarted by the courts, the people of Detroit turned their attention towards the state constitution. The legislature was importuned, session after session, to submit to the people a constitutional amendment authorizing Detroit, or the cities of the state generally, to adopt the policy of municipal ownership, if that policy should be determined upon by vote of the municipal electors. These efforts to secure a constitutional amendment were unavailing. The "interests" are well organized in Michigan as elsewhere, and it is seldom that the legislature escapes from their control. Being unable to secure the desired constitutional amendment, the city determined to make a further test of its powers under the existing constitution. The corporation counsel, Mr. Timothy E. Tarsney, contended that without special legislative authority the city could, as an incident of its powers over the streets, construct and maintain street railway tracks, to be leased to a private company for operation. The common council was sufficiently impressed by this theory to appropriate $10,000 for the purpose of laying enough street railway tracks to bring about a test of the city's constitutional rights. Soon after the appropriation was made, an injunction suit was brought to prevent the proposed track construction, and the case was taken to the courts for adjudication. The Wayne County Circuit Court, consisting of six judges, split even on the question of the city's right to build street railway tracks. An appeal was taken to the Supreme Court, where the case remained pending for many months.

Meantime, the people having become convinced that the present constitution was antiquated and ill-adapted to the needs of the present time, and seeing that the ordinary process of amendment had proved unavailing, voted to call a convention for a general revision of the constitution. The Detroit Municipal League had for several years been strenuously contending for municipal home rule on street railway matters. As soon as it was settled that a constitutional convention was to be called, the league urged that no new franchises should be granted or old franchises renewed pending the deliberations of that body. While affairs were in this condition, the city administration then in power was carrying on secret negotiations with the Detroit United Railway for a general "settlement" of the street railway question. Suddenly, like a bolt of lightning out of a clear sky, a remarkable franchise, upon which the city administration and the Detroit United Railway had agreed, was flashed upon the people of Detroit.

The Codd-Hutchins Franchise

There is nothing in the charter of Detroit to prevent the common council from passing any kind of a franchise that it pleases, but public opinion had been so deeply stirred during the Pingree régime that everybody in public life had for several years prior to 1906 been pledged to the referendum on any important franchise. Accordingly, Mayor Codd, in proposing the new franchise, which came to be known as the "Codd-Hutchins Franchise," linking together the names of the chief magistrate of the city and the general manager of the Detroit United Railway, made the ordinance the issue of his campaign for re-election. As a matter of course, and in fulfilment of pledges made, the proposed ordinance was to go to the people for approval or rejection. A remarkable campaign was carried on during the three months preceding the November election of 1906. The Detroit United Railway bought space by the half page or page in nearly all the daily and weekly papers and published a regular series of "Statements" in which it attempted to convince the voters that the franchise would be for their benefit. Indeed, the franchise had many attractive features. It proposed that all the company's franchises should expire together on December 4, 1924, leaving the city free at that time to handle the street railway question as a unit; it proposed a speedy extension of street railway lines into other districts which were sadly in need of street car service; it proposed the assumption by the company of the burden of paving between the tracks on all the lines, instead of only two-thirds of them, as under present ordinances; it proposed uniform rates of fare and universal transfers on all lines within the city limits. Cash fares were to be five cents each, and ticket fares were to be at the rate of six tickets for a quarter, except that during five hours of the day, including the morning and evening rush hours, tickets with transfer privileges were to be sold at the rate of ten for twenty-five cents. It was estimated that forty per cent of all passengers would ride during these five hours. Under the ordinance the city was to have the right to purchase the property at an appraised valuation at the expiration of the franchise. To emphasize the benefits of its proposition, the company put the proposed rates into effect for about two weeks prior to the election. The people of Detroit had the peculiar experience of being able to ride down town to their work in the morning and back at night for two and a half cents each way. Nevertheless, when the franchise came to a vote it was defeated by more than two to one, there being only 14,000 votes for it to 30,000 against it. The reasons for its defeat were several. In the first place, the ordinance involved the giving up of the eight-for-a-quarter tickets on the existing three-cent lines. Pingree's most precious legacy—the chief monument of his fame —was to be surrendered. It was in vain that the company argued that under the new rates transportation would cost practically the same on the average as it was already costing on the three-cent lines. In the second place, the people were incensed that their old enemy, the Detroit United Railway, should be spending thousands upon thousands of dollars to induce them to give it a franchise which, according to its argument, would be immensely profitable to the public. The company belied its arguments by its methods. In seeking to secure the adoption of this ordinance it was apparent that the company had entered into an offensive and defensive alliance with Mayor Codd in his campaign for re-election. The mayor campaigned for the ordinance, and the company campaigned for both the mayor and the ordinance. In the third place, the Detroit Municipal League and the anti-franchise committee, an impromptu organization established for the purpose, pointed out to the people that the ordinance was in many respects defective. Publicity of accounts was not provided for. No adequate control was given over future extensions. The rates of fare were calculated to increase rather than to relieve congestion at the rush hours. The company was excused from all taxes, except the two per cent gross receipts tax. As a result, the ordinance was overwhelmed, and the mayor who stood sponsor for it went down to defeat.

Meantime, preparation was being made for the constitutional convention, and the argument of the track-laying case was carried on before the Supreme Court. Early in 1907 the court decided that the "internal improvement" clause in the state constitution rendered even municipal construction of street railway tracks within the city limits impossible.

The Constitutional Convention

During the summer and fall delegates were chosen to the constitutional convention, which met at Lansing on October 22d last. The state legislature, manifesting the utmost anxiety to keep the constitutional convention wholly within the control of the dominant party of the state, and to hamper as far as possible the elements which had been asking for a progressive constitution, set the primaries at which delegates were to be elected in the middle of the "dog days." The result was a very light vote, and when the convention assembled in October, a railroad attorney, who was a notorious machine politician, was chosen to preside over its deliberations. The organization of the convention was almost completely in the hands of the railroad and reactionary interests. It soon developed, however, that in the body of the convention the progressives and the reactionaries had about equal strength. After long sessions and strenuous debates, considerable progress was made in drafting a modern constitution to take the place of the obsolete instrument of 1850. As finally agreed upon by the convention, the article relating to home rule and municipal ownership contains many interesting and important features.

"Subject to the provisions of this constitution, any city or village," says Section 23 of Article VIII, "may acquire, own and operate, either within or without its corporate limits, public utilities for supplying water, light, heat, power and transportation to the municipality and the inhabitants thereof; and may also sell and deliver water, heat, power and light without its corporate limits to an amount not to exceed twenty-five per cent of that furnished by it within the corporate limits; and may operate transportation lines without the municipality within such limits as may be prescribed by law: Provided, That the right to own or operate transportation facilities shall not extend to any city or village of less than twenty-five thousand inhabitants."

The most important limiting conditions attached to this general grant of power are the requirement that a three-fifths vote of the electors shall be necessary before municipal ownership can be undertaken, and the requirement that no bonds beyond the ordinary debt limit of the city shall be issued on account of any public utility, except bonds secured by the property of the utility alone, coupled with a conditional franchise to run for a period of not exceeding twenty years. It is also provided that no public utility franchise "which is not subject to revocation at the will of the city or village" shall be granted, except upon a three-fifths affirmative vote of the electors. The right to a reasonable control of their streets, alleys and public places is specifically reserved to cities, and no person or corporation operating a public utility may use a highway or street without the consent of the duly constituted authorities of the city, village or township.

The new constitution containing these provisions will be submitted to the people of the state for approval or disapproval at the election next November. If the constitution is approved, it will mark a considerable advance in the policy of Michigan with reference to the control of public utilities, and will, it is thought, place Detroit in a positon to deal more effectively with its street railway and other public utility problems than it has been able to do hitherto. The new policy outlined by the convention was shaped to a large extent by Professor John A. Fairlie, of the University of Michigan, who sat as a delegate from the district in which Ann Arbor is situated. Pending the adoption or rejection of the new constitution, the city administration will, no doubt, continue its merry war with the federal courts, and the "Hally Ordinance" will remain "unpublished" until its legality has been judicially determined. The chances appear to be that Mayor Thompson's present term will expire without his having been able to secure any definite judicial determination as to the constitutionality of his solution of the street railway problem.

The general policy which Detroit has followed with reference to the control of public utilities has been to depend upon competition. The history of street railway development has been much the same in Detroit as in other cities. Franchises were granted originally to several different companies, which by a series of combinations and consolidations have welded all the street railway lines into a single system. Nevertheless, this unified scheme still shows deep traces of competition. On one-third of the lines the rates of fare are different from the rates on the remaining two-thirds. While transfers are exchanged between all lines, a person riding on a three-cent line is compelled to pay a five-cent fare in order to get a transfer to a five-cent line. On two-thirds of the track mileage the regular fare is still five cents, but workingmen's tickets are sold at the rate of eight for a quarter, good from 5.15 to 6.45 in the morning and from 4.45 to 5.45 in the afternoon.

The Telephone Situation

The traces of competition are also found in other public utilities. No less than six telephone franchises have been granted, but one company has had a practical monopoly so far as actual operation is concerned. For the past two years, however, a new company, having succeeded to an old competing franchise granted by the common council, has been carrying on active operations, installing its plant and getting subscribers, in preparation for a competitive struggle with the Bell interests, which control the old company. Under the present law there is some question as to whether it is absolutely necessary for telegraph and telephone companies in Michigan to secure local franchises. But they have usually found it more convenient to do so in order to keep peace with the cities and villages in which they operate. The new constitution, if adopted, will remove the doubt by providing (Section 28 of Article VIII) that "no person, partnership, association or corporation operating a public utility shall have the right to the use of the highways, streets, alleys or other public places of any city, village or township for wires, poles, pipes, tracks or conduits without the consent of the duly constituted authorities of such city, village or township; nor to transact a local business therein without first obtaining a franchise therefor from such city, village or township." The general provision permitting municipal ownership does not apply, however, to telephone systems. Accordingly, no matter what policy Detroit may adopt with reference to street railways, gas and electric light and heating companies, there will be no possibility, if the new constitution is adopted, of the city's going into the telephone business. It is, therefore, to be expected, under the conditions now existing, that Detroit will have two telephone systems until such time as the disadvantages of competition have induced the companies to consolidate.

Electric Lighting

The city has also tried competition in the electric lighting business, with the result that all of the active franchises heretofore granted have fallen into the hands of two operating companies which are both owned by a single holding company and, therefore, operate in unison. When Mayor Thompson came into office on January 1, 1907, he immediately urged upon the common council the idea of having an investigation into electric lighting conditions, and the council finally consented to give the mayor a special appropriation and authorize him to secure the services of an electric light expert. Mr. H. H. Crowell, of Syracuse, was selected by the mayor for this work. In October, 1907, Mr. Crowell made an elaborate report on the history, rates, costs, etc., of the electric lighting industry in Detroit. He reported that the Detroit Edison Company had an outstanding capitalization of $11,600,000; that this company owned the stock of the two operating companies and furnished them with current; that the two operating companies together had a total capitalization of $3,560,000; that one of these companies paid a four per cent dividend in 1902, eight per cent dividends in 1903 and 1904 and no dividends whatever in 1905 and 1906, and that the other company paid eight per cent dividends yearly for the four years 1903 to 1906 inclusive. Mr. Crowell reported that "the fair valuation of the physical property and tangible assets reasonably required to carry on the business during the year ending December 31, 1906, was at least $3,355,000. This estimate was made up without reference to generating plants, inasmuch as all current was supplied to the operating companies by the holding company. In a careful analysis of an extremely complicated system of rates, Mr. Crowell concluded that, on the whole, the company's charges and methods were fair to the different classes of consumers. The average price paid for all electrical current sold by the operating companies was 5.15 cents per kilowatt hour. He said that the companies followed a very liberal up-to-date policy in the maintenance of their plants, but that the prices charged by the holding company to the operating companies for the current furnished them was at least 16 2-3 per cent higher than the necessary cost, if the current were to be produced by the operating companies themselves. The operating costs of the company were excessive on account of this high cost of power, and on account of a certain amount of excessive investment in plant and on account of loss of current. He found, on the other hand, that these excessive costs had been taken out of net earnings and had not caused an increase of rates. He reported that, as compared with the rates charged in the twenty largest cities in the country, the Detroit rates were low. A number of suggestions and recommendations were made, and the report, when presented to the common council, was accompanied by an offer from the companies voluntarily to reduce their primary maximum rate of charge to residences and on their general lighting business from 16 cents per kilowatt hour to 14 cents. This reduction was to take place July 1, 1908, but was contingent upon the city's making an agreement not to worry the companies any more for a period of three years.

There is no question but that the electric light companies of Detroit under the able management of Alexander Dow, have built up a splendid plant, and have their business in excellent condition. How far this excellence has been due to the fact that Detroit for the past ten years has owned and operated a municipal plant for public lighting it is impossible to tell. When the movement for the public lighting plant was first started it met with vigorous opposition from the electric light interests, and a much-heralded controversy was carried on for several years afterwards between the public lighting commission and Mr. Dow upon the question as to whether or not the municipal plant was a success. An effort was made during the last session of the legislature to get a bill passed authorizing the city to engage in commercial lighting. This effort was unsuccessful, but if the new constitution is adopted the right will be guaranteed without further legislation. The citizens of Detroit are proud of their public lighting plant, and the evidence seems to bear out the claim that in approximately ten years' time the city has supplied itself with light and saved enough on the prices that it formerly paid to private companies to pay for the plant itself.

The Gas Supply

The gas business in Detroit is a monopoly, with the exception that in the western part of the city, in a suburban district recently annexed, there is a competing company. The present gas franchise was granted in 1893 for a period of thirty years. It provided for a sliding scale of prices, beginning with a gross rate of $1.40 per thousand cubic feet, and gradually coming down to a gross rate of 95 cents per thousand, with a discount of 15 cents per thousand feet from the prices named, on all bills paid by the consumer within a month after they were rendered. The gradual reduction in price was based upon the increase of the total amount sold. The lowest rate of 95 cents gross or 80 cents net was to be reached when the company sold 800,000,000 cubic feet per annum for illuminating purposes. Under this franchise the company maintained two rates, one for illuminating gas and one for fuel gas, although the gas for both purposes was precisely the same. The difference in rates necessitated the maintenance of a double set of meters, however. In 1906 an ordinance was passed by the common council and accepted by the company amending the franchise so as to do away with the necessity of a double set of meters and a double set of accounts, and to reduce the price of illuminating gas to the minimum provided for in the old franchise. The schedule of maximum prices now in force is as follows: For the first 50,000 cubic feet used by any one consumer per month, 90 cents per thousand feet gross, 80 cents net; for the second 50,000 cubic feet used per month, 80 cents gross, 70 cents net; for the second 100,000 cubic feet used per month, 70 cents gross, 60 cents net; for all gas used in excess of 200,000 cubic feet per month, 60 cents gross, 50 cents net; for gas used for operating gas engines, 70 cents gross, 60 cents net. The company is authorized to lower these rates if it wishes to but having once lowered them, it may not raise them again without the consent of the common council. It is also provided that the company shall not "charge to or receive from any consumer a different rate than is charged to or received from any other consumer, and shall not in any way, by the granting of rebates or otherwise, discriminate among its customers" except as provided in the ordinance.

As soon as Mayor Thompson entered into office he set about having an investigation of the gas company, as well as of the electric light companies. He secured a special appropriation from the council and appointed experts to examine into the methods of the company and the quality and pressure of the gas furnished. As a result of this investigation, a regulating ordinance, drafted by the experts, was passed by the council and signed by the mayor. The company declined to accept it as a part of its franchise, but agreed to live up to it as a regulating ordinance. Under this measure the company is required to furnish gas of eighteen candle power, having a heat value of not less than 600 British thermal units per cubic foot. The pressure at which gas may be delivered to the consumer's meter is limited to a minimum of one and one-half inches of water pressure, and a maximum of four and one-half inches. By the ordinance there was established the office of gas analyst and inspector, with a maximum salary of $2,000. The ordinance requires that the gas analyst must have spent at least three years in the study of chemistry and physics in a college or university of recognized standing, and be skilled in the methods of gas analysis and testing. He is appointed for a term of three years by the commissioner of public works, but may be removed before the expiration of his term by the commissioner or the common council. He is required to test the gas supplied by the Detroit Gas Company at least once a day to determine its candle power. Frequent tests must be made to determine whether or not the gas contains forbidden impurities, and a record of pressure must be kept. Weekly and also monthly reports of the results of the tests are to be made to the common council. Under the gas franchise the city will have the right in 1923 to purchase the company's plant at a valuation to be fixed by a board of arbitration.

The city has tried competition even in the matter of central heating plants. Two heating franchises were given a few years ago. They are now controlled by the same interests.

In Detroit the common council has much larger powers than in many of the great cities of America. There is a tendency to make liberal use of these powers for the purpose of regulating the public service companies. The provisions of the charter under which the common council grants franchises and regulates public utilities are very brief and general: "Said council shall have power," says Section 170, "also to control, prescribe and regulate the manner in which the highways, streets, avenues, lanes, alleys and public places within said city shall be used and enjoyed." Section 197 says: "The common council shall have power to agree with any street railway company for the surrender of any rights of said company to operate its road on any street or avenue, on the condition that the common council shall not, without its consent, or during the existence of such rights, grant to any other company the right to maintain or operate its street railway on such streets or avenues; Provided, That said agreement shall not prevent the common council from granting rights to operate roads on any streets crossing such street or avenue."

Upon this slender foundation, together with certain clauses in the general laws providing for the incorporation of the different classes of public service companies, rests the power of the Detroit common council to grant franchises and regulate public utilities.

THE BOSTON CONSOLIDATED GAS COMPANY: ITS RELATION TO THE PUBLIC, ITS EMPLOYEES AND INVESTORS

By J. L. Richards,
President Boston Consolidated Gas Company, Boston, Mass.

The fact that gas for illumination could be obtained from coal is said to have been discovered in the seventeenth century, but nothing practical was done before the year 1804 or 1805, when gas was used in a limited way for lighting in Manchester, England. In 1807 experiments were made in the City of London for street lighting. The first company organized for the manufacture and distribution of gas, however, was not incorporated until 1810, when the Gas Light and Coke Company of London obtained permission to do business. In 1813 London Bridge was lighted with gas. The task was a hard one, but after many attempts it was successfully accomplished, and within a few years some of the streets in the vicinity of London Bridge were lighted in the same way.

In 1820 Paris took up the problem of using gas for her public street lighting. As soon as the two leading cities of the old world, London and Paris, had discovered this method of lighting their public ways and bridges, we find that the City of Boston, in the new world, through some of its public-spirited citizens, carefully began the study of the subject.

Boston was one of the pioneers in using gas in America. In 1821 the Massachusetts Legislature was petitioned by Josiah Quincy and others, to grant a charter for a smokeless fume made out of wood. In 1822 half a dozen leading business men got together in Boston to discuss the question of better light for that city. As a result they formed themselves into a company called the Boston Gas Light Company. They drew up a petition asking the legislature to incorporate them under that name, and in 1823 "An act to incorporate the Boston Gas Light Company" was passed, and approved by Governor Brooks. The following were the incorporators: William Prescott, Alexander Paris, Bryant T. Tilden, Nathan Hale and John C. Gray. These gentlemen were incorporated for the purpose of furnishing gas light in the City of Boston, with authority to have and use a common seal and authority to break and alter same at their pleasure. By their said corporate rights they had authority to hold real and personal estate in a sum not to exceed $75,000. Power was also granted under the third section of the act of incorporation, to open ground, with the consent of the mayor and board of aldermen, in any part of the streets and lanes and highways for the purpose of sinking such pipes and conductors as might be necessary for the purpose aforesaid. The necessary authority was given to enable the company to issue capital stock, to levy assessments on stockholders, and to sell shares after advertising the same for two weeks in the public press. Finally power was given to William Prescott and Alexander Paris to call the first meeting of said Boston Gas Light Company.

Previous to the incorporation of the company by the legislature, the board of aldermen at a meeting held August 19, 1822, received a petition from Alexander Paris for leave to lay pipes in the streets of Boston for establishing gas lights. The petition was referred to a committee. On August 27, 1822, the committee reported granting leave to Alexander Paris to lay iron pipes underneath the sidewalks of the city, under the direction of the highways commissioner. There was trouble about laying the pipes across the streets, from one sidewalk to another, so, on September 4, 1822, permission was granted to lay the pipes across the streets. On November 18, 1822, we find the first record of pipes having been actually laid, when the gas company was authorized to lay a pipe in the middle of Franklin Street reaching to the theatre, instead of laying the said pipes under the sidewalk. Mr. Paris and the city seem to have had grave differences as to whether the gas pipes should be laid under the sidewalks or in the highways, and, for the purpose of having his rights in the matter settled definitely, Mr. Paris organized the Boston Gas Light Company and petitioned the legislature to give his company the power to lay pipes in the highway.

We have now passed the first part of the history of the organization of the Boston Gas Light company. Next to be considered are the actual manufacture and distribution of gas in the City of Boston. On January 2, 1828, William Vernon sold to Nathaniel Robinson, for the sum of $7,501.50, a plot of land containing

15,003 feet, located on an unnamed street (now known as Hull Street). On September 24, Mr. Vernon sold him an additional piece of land adjoining the one formerly purchased, which contained 10,632 feet. Upon these two pieces of land the first gas plant was built. On January 1, 1829, the first public lamp was lighted in Dock Square. The inauguration of the use of gas as a medium for lighting was the occasion of a great demonstration at which the mayor of Boston and the aldermen made speeches of congratulation to the gentlemen in charge of the gas company, and promised them every assistance to increase the growth of their enterprise. The introduction of gas, as a medium for lighting, progressed slowly. On December 4, 1838, the city had twenty gas lamps. On May 1, 1839, it had 180 gas lamps. From 1839 to 1868 the number of gas lamps had increased to 4,312, and on July 1, 1907, to 10,182.

The prices paid for gas in the City of Boston have been as follows:

	Price per M cubic feet.
December 18, 1828, to January 1, 1844	$5.00
January 1, 1844, to January 1, 1847	4.00
January 1, 1847, to January 1, 1851	3.50
January 1, 1851, to October 1, 1852	3.00
October 2, 1852, to April 1, 1860	2.50
April 1, 1860, to January 1, 1864	2.25
January 1, 1864, to July 1, 1864	2.50
July 1, 1864, to October 1, 1864	2.75
October 1, 1864, to January 1, 1865	3.00
January 1, 1865, to January 1, 1870	3.25
January 1, 1870, to April 1, 1871	3.00
April 1, 1871, to July 1, 1872	2.75
July 1, 1872, to April 1, 1876	2.50
April 1, 1876, to April 1, 1879	2.25
April 1, 1879, to January 1, 1883	2.00
January 1, 1883, to July 1, 1884	1.80
July 1, 1884, to April 1, 1887	1.50
April 1, 1887, to January 1, 1888	1.40
January 1, 1888, to May 1, 1893	1.30
May 1, 1893, to July 1, 1905	1.00
July 1, 1905, to January 1, 1906	.95
January 1, 1906, to July 1, 1906,	.90
July 1, 1906, to July 1, 1907	.85
July 1, 1907	.80

About six years ago local financial interests, because of the reorganization of the New England Gas and Coke Company at Everett, obtained control of that corporation together with the Massachusetts Pipe Line Gas Company, Brookline Gas Light Company, Jamaica Plain Gas Light Company, and the Dorchester Gas Light Company, and soon after also secured controlling interests in the so-called Addicks group, consisting of the Boston Gas Light Company, South Boston Gas Light Company, Roxbury Gas Light Company, and the Bay State Gas Company, of Massachusetts.

It is well known that when the new interests secured control of the properties mentioned, the various companies were looked upon with disfavor by the public, and realizing that fact the present management has endeavored to conduct the business affairs of the corporations on a broad, liberal, business basis, believing that one of the most valuable assets that a public service corporation can have is the confidence of the public. During the first two or three years the present owners were prevented from accomplishing many things which they had been planning to do because of suits, injunctions, hearings, etc., and not until July 15, 1905, were the eight companies referred to above consolidated.

Since that date some of the press in different sections of the United States have been good enough to call the Boston Consolidated Gas Company a "model public service corporation." What has been done to deserve that compliment? The company started in to do business with the determination not only to do those things which it had to do, but to do many things which it did not have to do. On July 1, 1905, it voluntarily reduced the price of gas five cents, and again reduced it on January 1, 1906, five cents more. The company also commenced laying services free of charge, and looked after burners so that consumers could get the best results for their money.

The reduction in price of gas, referred to, together with the other things which the company did free of charge, resulted in a saving to the consumers of gas in the fiscal year ending June 30, 1906, of at least $265,000. At the same time the company established what we originally called our "Missionary Department," consisting of some forty men whose duties are, primarily, to call on each of the one hundred and nineteen thousand customers, buying from us, and establish, so far as possible, mutual understanding and confidence between the public and the company by taking up each individual case of complaint, whether past or present, investigating the same and thereby enabling the company, if possible, to satisfy the consumer.

In 1906 the company adopted the "sliding scale," which meant an immediate loss to its stockholders of 1 per cent, amounting to over one hundred and fifty thousand dollars per year. This "sliding scale" provides for a reduction of five cents per thousand, which reduction must be in force one year before the dividend to the stockholders can be increased 1 per cent.

The company also adopted the profit-sharing plan in favor of its employees, which provides that any person who has been in the employ of the company for one year or more, who is of good habits, faithful, energetic and honest, is paid the same premium or dividend on the amount of his compensation that the stockholder receives as dividend on his investment; thus, if the company pays its stockholders 7 per cent in dividends per year, the employees receive 7 per cent additional to their regular pay. The amount, however, is not paid to the employee in cash, but is credited to his account, and when there is a sufficient amount standing to his credit to buy one or more shares of the preferred stock of the Massachusetts Gas Companies the president is authorized to make the purchase for the employee. When the stock is once purchased, it becomes the absolute property of the employee, and he has a right to do with it as he sees fit, but before selling that stock he has to notify the president of his intention of doing so, and if there is any reason why the employee should sell it—because of the actual need of the money—he may dispose of it without restrictions. On the other hand, if there is no good reason, in the opinion of the chief executive, for the disposal of the stock by the employee, while the employee may dispose of it, he will be dropped from the profit-sharers' list in the future if he does so. Any balance that is not used for the purchase of stock is placed to the credit of the employee on the books of the company, and he is paid 4 per cent interest thereon.

By the profit-sharing plan the company not only gets better results from the employees, but it also encourages them to become frugal and economical. We now have about 690 employees that have an owner's interest in the business, because of this profit-sharing plan, and it is not necessary for me to say that under these circumstances the company is bound to get better results than the corporation run in the ordinary way. Every employee is eligible as a profit sharer—except the president—whether he be an office boy at $3.00 per week, or an engineer in charge of important departments. Under the profit-sharing plan the company will pay this year to its employees approximately $60,000. The Boston Consolidated Gas Company to-day is as near a co-partnership of the investor, the employee and the public as it seems possible to obtain.

In the year ending June 30, 1904, the sales of the companies that now constitute the Boston Consolidated Gas Company, to consumers, were 3,012,948,650 cubic feet. The net profits for that year were $1,176,262.80; the cost of gas at the burner $0.6263, and the price to consumers $1.00 per thousand cubic feet. In the year ending June 30, 1907, the sales to consumers were 3,771,504,045 cubic feet; net profits $1,199,693.88; net cost at the burner $0.5572, and the price to the consumers 85 cents per thousand cubic feet. When the present owners obtained control of the gas properties in Boston, because of conditions that existed in the past, the situation was not an ideal one from a physical standpoint. Immediately after consolidation, improvements were commenced by laying new mains, building new holders, enlarging and improving existing works and building new ones, and since consolidation, up to December 1, 1907, the company paid $2,182,959.18 for improvements. The company was fortunate in having old property which could be sold, as the improvements were made, thus paying the larger portion of the sum mentioned.

Gas is now furnished by the Consolidated Company to consumers in Boston, Chelsea, South Boston, Roxbury, Dorchester, Jamaica Plain, Hyde Park, Dedham, Brookline, Brighton, Allston, Newton, Waltham and a portion of Charlestown. The gas for the districts mentioned is generated in the plant at Commercial Point, which has a capacity of 8,000,000 cubic feet per day (2,000,000 feet coal gas and 6,000,000 feet water gas); and at the Calf Pasture Station 6,000,000 cubic feet per day (water gas). In addition to the above quantities the Consolidated Company obtains from the New England Gas and Coke Company, approximately 6,000,000 cubic feet of coal gas per day. The New England Gas and Coke Company is owned by the same interests which own the Consolidated Company, and has the same chief executive. The Consolidated Company is now building another new plant which, when completed in the early fall of 1908, will have a capacity of 11,000,000 feet per day.

The sales of the Boston Consolidated Gas Company for the six months ending December 31, 1907, were 2,374,721,000 feet, of which 2,093,505,000 feet were sold to consumers, and the balance to other companies. The sales for the last six months show a much larger increase than the company has ever had before.

Those who have been familiar with public affairs in Massachusetts during the past few years will remember the active part that Mr. Louis D. Brandeis and others have taken in the subject of public service corporations. In the November issue of the "Review of Reviews" appears an article written by Mr. Brandeis, and I take pleasure in quoting from that article the following:

"Boston has reaped from the sliding scale system far more than cheaper gas and higher security values. It has been proved that a public service corporation may be managed with political honesty, and yet successfully, and that its head may become a valuable public servant. The officers and employees of the gas company now devote themselves strictly to the business of making and distributing gas, instead of dissipating their abilities, as heretofore, in lobbying and political intrigue. As a result, gas properties which throughout the greater part of twenty years had been the subject of financial and political scandals, developing ultimately bitter hostility on the part of the people, are now conducted in a manner so honorable as to deserve and to secure the highest public commendation."

Results, such as have been achieved in the gas industry of Boston, are by no means due to the chief executive alone. To make a public service corporation a success—which means that it must be mutually beneficial to the public, the employee and the investor—the chief executive must have not only the assistance of his directors and the loyal support of the employees, but, also, the confidence and hearty co-operation of the public.

PHILADELPHIA'S RELATION TO RAPID TRANSIT COMPANY

By Edwin O. Lewis,
Member of Philadelphia Bar and Member of the City Council.

The era of readjustment in the relations between municipalities and public service corporations has brought no good to Philadelphia. A general wave of dissatisfaction with old conditions in the operation of street railways swept over the city but instead of providing a better system of control, it carried with it all the safeguards and protections of old franchises and laws. It left in its wake a city bereft of all control over its transportation system and bound for at least fifty years under a contract that has no counterpart in municipal history.

This contract was signed by the mayor of Philadelphia and by the transit company in pursuance of an ordinance of the city councils passed June 20, 1907, and took effect on July 1, 1907. As it defines and fixes the relation of the transit company to the city, an analysis of its terms will best describe their relative positions. In considering the contract it will be instructive to briefly review the circumstances under which it was proposed and then made into law.

The Street Railway System

All of Philadelphia's street railway system, with the exception of three small suburban lines, is controlled by the Philadelphia Rapid Transit Company, a holding company chartered May 1, 1902. It owns no tracks, but operates all lines through a 999-year lease of the Union Traction Company. This company chartered September 6, 1895, likewise owns no lines, but is the lessee of all the principal franchises. These it acquired between 1895 and 1901 by obtaining 999-year leases of the old holding companies, the Philadelphia Traction, Electric Traction, People's Traction, and several independent lines, the Hestonville, Mantua and Fairmount, the Lehigh Avenue, the Lindley Avenue, Fisher's Lane, the

Frankford and Fairmount, and the Germantown and Fairmount Park.

There are, therefore, really five holding companies, each of which has outstanding many millions of stock and some bonds, the dividends and interest thereon being guaranteed and paid by the dominant corporation, the transit company. The outstanding stock and bond issues of these holding companies are as follows:

	Stock.	Bonds.
Philadelphia Rapid Transit Company.......	$30.000.000	
Union Traction Company..................	30.000.000	$1.500 000
People's Traction Company	21.007.000	
Electric Traction Company	14.535.940	
Philadelphia Traction Company	20.000.000	665.000
	$115.542 940	$2.165.000

There are some thirty-eight surviving minor companies, which have perpetual charters and own perpetual franchises over the streets. These subsidiary companies (excluding the one elevated and subway company) have outstanding stock amounting to about $9.510.142 and bonds of over $7.158.100. Of this total stock issue of all companies of $124,053.082 and total bond issue of $9.323.100, representing 563.47 miles of single track railway, all is interest- or dividend-bearing except the transit company's stock issue of $30.000.000, which is not yet fully paid. The aggregate yearly rental required to be paid by the parent company to meet these charges is $7.143.431.66, and as compared with gross earnings for the year ending June 30, 1906, amounting to $17.676.248.58, equaling 48.88 per cent of receipts.

The annual report of the transit company for that year (ending June 30, 1906) showed:

Total receipts from all passengers		$17.483.144.79
Other sources, including interest on deposits		193.103 79
		$17,676.248.58
Operating expenses, $52^{37}/_{100}$ per cent............	$9.153.603.70	
Taxes paid state and city, all companies........	1,075.216.57	
		10.228.820.27
		$7,447.428.31

Guaranteed dividends and rentals to leased companies, including $1,200,000 to Union Traction Company	$7,143,431.66
Balance of net earnings	$303,996.65

Thus only $303,996.65, or 1.7 per cent, was shown by the books to be available for improvements, extensions, surplus and for dividends on $30,000,000 of stock.

This was the condition of the Philadelphia system in 1906, when the city became aroused over the very poor transit facilities furnished by the company. The service was slow, the equipment inadequate and out of repair, and the management apparently indifferent to criticism. In the midst of the popular agitation, the transit company, through its directors and friends, issued public statements excusing its shortcomings and alleging as the ground therefor the difficulty it experienced in raising money, due to the existence of certain laws, ordinances and contracts affecting the street railway companies, which impediments had accumulated between 1857 and 1901. These were the laws and obligations which prior to July 1, 1907, defined and prescribed Philadelphia's relations with its street railway system. The most important and valuable were the ordinances of July 7, 1857, April 1, 1859, and March 30, 1893. They secured to the city the right to compel the companies to pave and keep paved, from curb to curb, all streets traversed by their lines; to remove all snow from such streets; to remove overhead wires and poles upon demand and finally, insured to the city the right to purchase some of the most profitable lines "at any time" by paying a "fair valuation." Numerous other restrictions for the protection of the city were imposed by the same and similar ordinances.

The transit company demanded the repeal of all such laws which, as it claimed, depressed its securities and interfered with the raising of funds for needed improvements. Its complaints and cries for relief were advanced with the utmost shrewdness.

All of the newspapers and many of the people of the city were led to promise their support to a method of adjustment which the company was about to put forward. This plan was soon published, and embodied a contract to be executed between the city and the transit company by which all their relations should be defined and limited, and all the laws and ordinances above referred to be repealed. It was essentially a company proposition, and although apparent from every section that it would operate to the advantage of the company and to the disadvantage of the city, yet the popular mind was so dulled and so trusting that within a very brief space of time the street railway problem was "solved"—to the thorough satisfaction of the transit company at least.

The legislature of Pennsylvania was in session in the winter of 1906-07, and the friends of the company went to Harrisburg with a bill authorizing municipalities and street railway corporations to enter into contracts to regulate and fix the powers, duties and liabilities of such companies. After considerable lobbying this bill was passed, and Governor Pennypacker signed it, despite the protest of a large committee of citizens. The ordinance passed councils in June, 1907, and the contract became effective July 1, 1907.

Terms of the Contract

Philadelphia's contract should not be accepted as a guide or pattern for other cities. It is to be studied, not followed. In the opinion of all critics, it is the consequence of political conditions peculiar to Philadelphia and hardly possible elsewhere.

The agreement, of some ten pages, with fifteen paragraphs, is now the code of laws governing street railways in Philadelphia. By its terms virtually every existing law or ordinance affecting the construction, operation or taxation of such railways was repealed *eo instanter*. The preamble is an index of its contents. It reads in part:

> WHEREAS, Beginning about the year 1857 different companies to the number of upwards of fifty, incorporated by the Commonwealth of Pennsylvania, have been granted consent by the city to occupy various streets of the city for the purpose of transporting passengers from point to point along the same, which franchises and consents have been granted subject to various conditions and restrictions; . . . .
>
> AND WHEREAS, The terms, conditions, restrictions and liabilities which have been imposed upon these various companies . . . . differ widely, and there is dispute and uncertainty with respect to the effect of many of the provisions thereof, and it is believed that it is to the interest of the public as well as of the parties hereto to supersede the former regulations, and to define and regulate the relations between the parties hereto so as to make them fixed, fair and uniform;
>
> AND WHEREAS, The city should have a voice in the management of the company and a supervision of its accounts and expenditures;

And Whereas, A large sum of money is required to improve, complete and extend the present system of the company in order that it shall better serve the public; and for this purpose it is essential that the position of the company be clearly defined, and the securities of itself and its underlying properties unquestioned, and its right to make extensions in the future assured, in order that it may obtain credit to finance the increased transit facilities so necessary for the welfare of the public and the development of the city; . . . . , etc.

In the first and second paragraphs it is stipulated that the transit company shall not increase its capital stock or funded debt, assume further leases or obligations, or part with any of its leaseholds, stocks or franchises without the city's consent; and that when extensions are to be made or new companies are to be organized, the company shall apply for and receive the consent of the city before such action shall be of effect.

The third paragraph concerns new lines, and has given rise to much criticism. It declares that when there is a public demand or petition for any lines of surface, elevated or subway road, councils shall first by ordinance determine the route of such line and the terms and conditions under which it shall be built, financed and operated, and the transit company shall then have a ninety days' option on such franchise; and if and only when the transit company rejects such franchise, or accepting it, fails to begin work of construction in good faith, can the road be offered to other persons or corporations. It must then be offered on terms and conditions exactly similar to those which were tendered to the transit company. This effectually shuts out all competition for at least fifty years, in the entire city. If a franchise were acquired by a competing company it would be liable to forfeiture should there be the slightest variation in the terms and conditions of erection, financing or operation from those first rejected by the transit company.

The fourth paragraph confers upon the city the right to be represented on the board of directors of the company by the mayor (*ex officio*) and two other persons elected by councils for terms of four years, and gives to these representatives all the powers of directors and a vote upon all questions, but without incurring liability as directors. When one reads the corporation laws of the state, it readily suggests itself that this provision is difficult of enforcement, if not absolutely without legal effect. Subsequent to the execution of the agreement, councils chose two citizens as directors, and they, with the mayor, have attended the board meetings. No advantage to the city has as yet resulted from such representation.

The fifth paragraph requires the company to file with the city controller a "full statement of receipts and expenditures for the preceding fiscal year," and directs the controller to thereupon examine the books, accounts and vouchers of the company, "for the purpose of ascertaining the correctness of said reports," and to report the result to councils. The controller already has under his care all the books and accounts of the city, and such an examination by clerks of his office will not prove a very efficient safeguard of the city's interests in the accounting of the company. In the Chicago ordinances, a much more complete verification is required—the report must be made under oath and on forms prescribed by the city controller. This is followed by an annual audit of the company's books by expert accountants, in the selection of whom the city has a voice.

The sixth paragraph relates to dividends and the city's share of profits. It provides that the company shall not declare or pay any dividends beyond six per cent per annum, cumulative from January 1, 1907, without at the same time appropriating from earnings and surplus and paying into the city treasury a sum equal to that portion of the total dividend which is in excess of six per cent. Transit company stock has not yet paid a one per cent dividend, so that a six per cent return seems far distant, and the cumulative feature is a bar to the city for many years to come. Should twenty per cent be earned and all the accumulated arrearages be met, the city would be entitled to nothing so long as the directors chose not to *declare* a dividend beyond six per cent.

The seventh paragraph is of no general interest. It extends for three additional years a franchise to build a Frankford elevated road. It may be mentioned that no obligation is anywhere put upon the transit company to build any new lines, surface, elevated or subway, it being free to surrender even the Frankford elevated franchise after three years of inaction.

The eighth paragraph is of such importance that I give it in full:

> The city hereby confirms to the company and its subsidiary companies all of the consents, rights and franchises heretofore granted to and exercised by them, and each of them, including the right of operation by the overhead

> trolley system, free of all terms, conditions and regulations not herein provided for, and does further give up and surrender and agree not to exercise any rights which it may possess in respect to a repeal or resumption of any of the said rights now possessed or heretofore granted, or a taking over of any of said properties, any law, ordinance or contract now in force, or hereafter passed to the contrary notwithstanding. *Provided*, however, that the present rates of fare may be changed from time to time, but only with the consent of both parties hereto: And *provided further*, that nothing in this contract contained shall be construed to limit the power of the city to make all rules and regulations, relating to the operation and management of the lines controlled by the company, necessary and proper to be made under the police power.

It will be seen that here the city bargained away every reserved power of control or regulation which it possessed, except such as can be brought within the scope of the police power—*i. e.*, the protection of the health and safety of the citizens. No feature of the agreement more aptly illustrates the difference between it and the Chicago ordinances. Section 35 of the Chicago City Railway Company ordinance provides, *inter alia:*

> And the said city hereby expressly reserves the right to make all regulations which may be necessary to secure in the most ample manner the safety, welfare and accommodation of the public, including among other things the right to pass and enforce ordinances to protect the public from danger or inconvenience in the management and operation of street railways throughout the said city and the right to make and enforce all such regulations as shall be reasonably necessary to secure adequate and sufficient street railway accommodations for the people, and insure their comfort and convenience.

In large cities overhead wires and poles are rightly deemed relics of a rude and inartistic age. Philadelphia had an expressly reserved power to compel the removal of these unsightly and somewhat dangerous obstructions, and to compel the adoption of underground trolleys over the whole rapid transit system, but this power, too, was surrendered.

The prevailing rate of fare in Philadelphia is five cents minimum and three cents additional for a transfer. This high toll is perpetuated, unless the company shall voluntarily reduce its charges.

In the ninth paragraph the company covenants to create what is termed a "sinking fund," to be held by three designated city officials, for the benefit of the city. No payment to this fund is to be made until July, 1912, when payments of $10,000 monthly for ten years are to be made; then $15,000 monthly for ten years;

$20,000 monthly for ten additional years; $25,000 monthly for a fourth period of ten years, and finally $30,000 monthly for the last ten years. These payments are to be treated by the company as fixed charges "reducing the income applicable to dividends," and are to be paid ahead of dividends until any arrears are met. The fund shall be invested in securities legal for trustees and in stock of the transit company, at par, on bonds or underlying securities of the company on a four per cent basis. Stock of the company once acquired shall not be resold. The city is given the right by ordinance to withdraw the money from the sinking fund at any time after it equals $5,000,000 and to use it for any purpose, at the same time requiring future payments to be made direct into the city treasury. This paragraph should be considered in connection with paragraph eleven, which gives the city the right to buy the property, leaseholds and franchises of the company on July 1, 1957, or upon the first day of July in any year thereafter, by giving six months' notice and upon paying to the company an amount equal to par for its capital stock then outstanding, the city to take the property, leaseholds and franchises subject to all bonds, rentals and other indebtedness then existing. In making up the purchase price it is stated that the city shall be entitled to use the money in the sinking fund, if any remains therein. Upon purchase by the city it is to be free to operate the lines or lease the right to operate upon such terms as it may desire, the rights of the city to be assignable and may be put up at public sale to the highest bidder. The company reserves its franchise as a corporation with power to operate passenger railway lines and may become a bidder for the city's rights.

The value of this right of purchase and sinking fund is much less than it may appear. The sinking fund, if allowed to accumulate for forty-five years, or till 1957, will not supply the $30,000,000 required to pay for the stock now outstanding; and the city, having the right to withdraw the money by simple ordinance after it amounts to $5,000,000, it is not to be thought possible, in these days of huge political contracts, requiring large sums to be raised by municipalities, that the sinking fund will remain intact. And if the sinking fund be withdrawn, the city will be without the means to exercise its right of purchase.

As we have seen, the Rapid Transit Company, prior to the execution of this contract, was responsible for the paving and repaving of several hundred miles of city streets, paid $50 per year license upon each of its 2,421 cars, or $121,050 per year, and was compelled to remove snow from streets occupied by street railways. In the tenth paragraph of the contract these expenditures and all other possible taxes and license, except the small item of real estate taxes and dividend tax under state charters, are capitalized, and the company agrees to pay, for fifty years, an annual sum of from $500,000 for the first ten years to $700,000 for the final period of ten years, in lieu of all obligations for street paving, snow removal, car licenses, and any other kind of tax or charge except real estate and dividend taxes. The city agrees to accept the annual payment as also in lieu of the right to hereafter impose upon the company or its subsidiary companies similar charges or obligations, including license fees upon the system or operating cars. In the original draft of the contract the city surrendered all right of imposing further taxes or obligations, but the legality of this being questioned, a clause was inserted to the effect that in case any taxes or assessments be hereafter imposed by the city upon the company the annual sum herein provided for and the city's share of any dividends shall be credited to such taxes and assessments, further taxation being thus made practically impossible, though not legally so.

For streets on which new lines or extensions may hereafter be built the company agrees that there shall be added to such yearly sum seven cents per square yard of macadam pavement, eight cents per square yard of asphalt, and six cents per square yard of other kinds of pavement, this being intended to reimburse the city for relieving the company of the original paving of such streets and the maintenance of same. The company continues to be responsible for repairs to streets torn up by its workmen or damaged by them.

It was called to the attention of the councils, while the ordinance was pending that, while the contract is not limited in duration, and may continue in effect 100 to 500 years, the annual payments in lieu of taxes and street paving repairs cease in 1957. This criticism, however, was disregarded.

The twelfth paragraph declares that the city shall not be deemed a partner with the company, nor be responsible for its obligations; that it shall not become a joint owner or stockholder in the company, nor shall its credit be pledged or loaned to the company. The constitution of the state preventing all such contingencies, the section is surplusage.

The remaining paragraphs of the contract are formal. The ordinance authorizing the contract provided for the repeal of all ordinances and for the cancellation and annulment of all contracts inconsistent with its terms, and that repeal became operative upon the signing of the agreement.

Effect of the New Contract Upon the City

An immediate and surprising effect of the execution of the contract of July 1, 1907, was to allay public feeling against the transit company and to silence all demands for better service and improvements in the railway system. The interest of the people in the transit question apparently died when the agreement was born, and no effort has since been made by the city government or by civic organizations to force the company to redeem its promises to improve the traction facilities. This is the more surprising when it is recalled that support for the company's plan was obtained on the representation that its adoption would mean the prompt rehabilitation of the operating department, including the furnishing of an abundance of new cars. That the attitude of the newspapers and citizens generally toward the change in relations was altogether too confiding and their knowledge of the contract superficial is illustrated by this quotation from an editorial which appeared in one of the leading morning newspapers while the ordinance was before councils:

> This paper has not opposed editorially the rapid transit plan because it is the only definite plan that has been offered which affords any hope that the thousands of hard-working people who are forced indecently and barbarously to hang by car straps in a seething mass of wriggling humanity, will be carried in more comfort than at present. The opposition to the plan is wholly negative, and proposes no relief of the kind that promises to move actual people to and from their homes.

It is authoritatively stated that the transit company has curtailed the facilities rather than improved them since July 1, 1907. The number of cars in operaton has been reduced by from 100 to 200, and the overcrowding has not been remedied.

All observing persons believe that only a strong alliance between the political leaders of the city and the transit company made possible the forcing through councils of the repealing ordinance and contract. The police department has been swung over to the aid of the company in preventing suits for personal injuries, and it is charged that the first report of all accidents on the street railways is telephoned by the police department to the company's detectives.

For many years Philadelphia has been reputed the best paved large city of the country. This has been due to the fact that the maintenance of over 7,000,000 square yards, or about 450 miles, of paved streets was required of the street railway companies, and the paving repairs were promptly made. Now that the transit company has been relieved of this duty, the streets are in worse condition than has been known for many years. The total income of the city from the company under the agreement of 1907 is $500,000 per year until 1912, when $120,000 additional will be allotted to the sinking fund. Meanwhile it has been necessary for councils to set aside the entire $500,000 for paving the streets occupied by railways and to appropriate a further sum of about $25,000 for salaries of inspectors to superintend the work formerly done by the railways. The $121,000 of car license fees heretofore received by the city appears to be a complete loss, and the city is charged with the expense of removing snow.

Philadelphia's contract cannot be defended. From a municipal point of view it was a stupendous blunder. As my analysis is made from that standpoint, it is necessarily critical. It should not be imagined that the agreement is a failure from the corporation standpoint; on the contrary, it has been a success, seemingly accomplishing all that the company looked for. In fact, within a few weeks after its execution, it became so apparent that the city had been the loser in the matter of yearly payments for taxes and street paving that the company voluntarily acceded to a request that a committee of its directors and citizens be appointed to revise the sum to be paid to the city. That committee, however, accepted the company's statements of its expenditures for paving repairs and snow removal as conclusive, and did not consider what would be the cost of such work to the city. The result was a report declaring the $500,000 a fair lumping of the company's previous disbursements. No mention was made of the loss to the city in the matter of original paving on new lines or extensions, nor of the fact that the company obtained a low average of annual paving expense by neglecting all repairs to city streets in the year ending June 30, 1907.

The people of Philadelphia had no intelligent conception of the real purport and effect of the ordinance and contract. The legal questions raised in the transit situation were so involved and the sources of information so limited that few men realized at the time what the effect of the work of the company's lawyers and the politicians would be. The subject had not been considered by a commission of experts, nor been instructively threshed out in the debate of a heated political campaign, as in Chicago.

Chicago's plan of reorganization was conceived and executed by men who sought to benefit and protect the interests of the municipality, while in Philadelphia the readjustment was planned by the company's lawyers and executed by politicians who accepted the company's point of view without question. The difference in source of the two methods of dealing with the street railway problems undoubtedly accounts for the very apparent disparity in the results thus far obtained by the two great cities.

Nothing has occurred in Philadelphia since the passage of the ordinance to awaken interest in the true relations between the municipality and the company. The idea prevails that the city is a full partner with the company and will reap substantial benefits from the contract. The general ignorance will no doubt continue until transit conditions again become a source of acute irritation. That may be two years distant or it may be ten; but when the people learn the truth there will ensue a period of violent agitation.

As no laws can restrain public opinion and no institution can successfully resist the force of public necessity, this vicious agreement will some day be broken. But such a result will be accomplished only at great expense, and the blame therefor rests upon the citizens whose indifference invited the consequences.

FRANCHISE GRANTS IN NEW YORK CITY

By John J. Murphy,
Secretary Citizens Union of the City of New York.

For the comprehension of the existing franchise situation in New York, a brief historical sketch of the evolution of the franchise-granting power is necessary.

The power to grant franchises is, of course, in the state, which has from time to time delegated its powers to the municipality, with restrictions as to the time for which franchises may be granted, and requiring the consent of local authorities, or abutting property owners. The Dutch states-general and the English crown vested the mayor and aldermen of the City of New York with broad powers as to franchises and, on the whole, these powers seem to have been carefully guarded in the earlier days. Among the earlier franchises were some for markets and wharves or docks. Markets were the earliest illustration of municipal ownership and operation, the city constructing the buildings and leasing stalls to merchants. Franchises for ferries between Manhattan Island and Nassau Island, and with the mainland (New Jersey) were also of early creation. In all cases the grant of the privilege involved the payment to the state of a special rent, or a proportion of the receipts. In most cases the period of the lease was short, so that the city derived a benefit from the growing value of the privileges conferred.

After the Revolution, the rapid growth of the city made special franchises of extraordinary value, and the power to grant them, possessed by the board of aldermen, seems to have been the chief factor in earning for the board the unenviable reputation which it has long borne. Indeed, the story of the granting of franchises from the earliest period down to the consolidation of the greater city is a most discouraging record. Except in the case of franchises for ferries and gas companies, no time limitation seems to have been imposed, although the franchises did contain a provision requiring efficient public service.

By the definition of the New York courts a franchise is declared to be a special privilege conferred by the government on individuals and corporations. It is a privilege which does not belong to citizens of the country in general by common right. A distinction exists between a franchise to be a corporation and the other franchises which may be conferred by the sovereign power upon corporations. The right to be a corporation is itself a separate, distinct and independent franchise, and the corporation having been created may receive a grant of other distinct and independent franchises. These later franchises are no part of the essential franchise of a right to be a corporation, but are additional. Those franchises which permit corporations to perform certain public services are called public franchises. The importance of keeping this distinction in mind is well demonstrated by the case of the Broadway road.

On December 5, 1884, the board of aldermen of the City of New York passed a resolution granting a franchise for a surface railroad on Broadway to the Broadway Surface Railroad Company. As the result of a struggle for the control of this valuable franchise a legislative investigation into the manner and consideration for the granting of the franchise was instituted, which was followed by the indictment of a majority of the board of aldermen. The public indignation, following on disclosures of corruption, caused a law to be passed in May, 1886. dissolving the Broadway Surface Railroad Company. But while the franchise of the company to be a corporation was declared by the courts to be thereby extinguished, the franchise to own and operate the road had not been extinguished, and the latter franchise, together with all the property of the company, which had passed into the hands of a receiver, was disposed of at public auction and bought by the Broadway Railway Company, a former rival of the defunct Broadway Surface Railroad Company.

In this case it will be seen that the distinction between a franchise to be a company and a franchise, to own and operate a road was very sharply defined. The award of the Broadway franchise was the climax of a series of corrupt awards which had been going on for more than half a century. By the time consolidation arrived (January 1, 1897) practically every available surface franchise was controlled by one or other of the corporations doing business in New York, and while none of the franchises were in terms exclusive, the companies were generally able to suppress competition by influence upon the bodies having the power to grant new franchises.

When the new charter of 1897 went into effect, it limited the power of the local authorities to grant franchises to a period not to exceed 25 years with 25 years renewal for surface roads, and 50 years with 25 years renewal for sub-surface roads—the increase in the term of franchise for the latter being due to the recognition of their greatly higher cost of construction. The result of this change of policy was to diminish the demand for new rights, and in the early years of the greater city few applications for franchises were made.

In 1905 a very radical change in the method of granting franchises took place. The power to grant franchises in the City of New York was taken from the board of aldermen and vested by act of the legislature in the board of estimate and apportionment, subject to the approval of the mayor. The board of estimate consists of the mayor, comptroller and president of the board of aldermen, each having three votes and elected by the voters of the whole city; the presidents of the boroughs of Manhattan and Brooklyn having two votes each; and the presidents of Bronx, Queens and Richmond, having one vote each, the latter officials being elected by the voters of the respective boroughs.

It is a notable occurrence that the action of the board, which caused its power to be finally taken from it, was not the improper granting of a franchise, but the withholding of a franchise. The Pennsylvania Company, being desirous of connecting its Jersey lines with its recently-acquired Long Island lines, asked for a perpetual franchise with twenty-five year revaluations, for a tunnel under the Hudson River, under certain streets of the Borough of Manhattan, under the East River and finally to Jamaica, L. I. The rapid transit commission, which had jurisdiction of sub-surface roads, granted its consent, but was compelled, under the law, to refer the matter to the board of aldermen. The board of aldermen referred the matter to a committee which took no action for several months. Finally the counsel for the Pennsylvania Company, the Hon. Edward M. Shepard, had a bill drawn amending the charter so as to transfer the power to grant consent in such cases from the board of aldermen to the board of estimate and apportionment. The bill passed the legislature, and thus the board of aldermen of the city was shorn of the only important function then remaining in its hands.

Public sentiment in Manhattan especially, and in a general way through all sections of the city, is opposed to further extensions of elevated railroads as being unsightly, unsanitary and prejudical to the living conditions of people in their immediate vicinity. Hence most of the discussions in New York to-day centers about the granting of franchises for subways.

Subway construction is so comparatively novel in the experience for American municipalities, that the people have not yet begun to adjust themselves to the new conditions which are thus created. Subway construction and equipment is estimated to cost about $3,000,000 per mile, and it is obvious that no short-term franchise, with a five-cent fare, can be so drawn as to be an attractive proposition for private capital. This fact has not been made very clear to the public, which grows more and more impatient of published propositions to amend the Elsberg Bill, which became a law three years ago and which rendered impossible the granting of franchises for fifty years with a renewal of twenty-five years, as in the case of the present subway.

The most important step which has been taken towards reform in the granting of franchises has been the creation of a bureau in the office of the comptroller known as the bureau of franchises whose functions are as follows:

First, to report upon all current applications for franchises, or, in other words, to make an inquiry required by law.

Second, supply information to the legal departments of the city, also to administrative officers who are charged with issuing permits for the use and opening of streets to enable the companies to operate under their respective grants.

Third, to watch the operations of the several companies under their franchises, in order that the rights granted may not be abused or exceeded, and that their several obligations be promptly met.

The value of this agency can hardly be overestimated. Up to the time of its creation there was practically no place to which an official, desirous of doing justice to the city, could go for information as to the terms of grants existing or applied for. The bureau has in its three years of existence collated what is probably the most complete collection of facts dealing with franchise questions ever gathered in one place. When it is considered that its work involved the search of the minutes and records of all the local boards of the various cities, towns and villages, etc., that were absorbed into Greater New York, and that these bodies had existed for periods varying from two hundred years to twenty years, the colossal task involved can be estimated. This bureau has been recently made independent of the comptroller's office and been placed directly under the control of the Board of Estimate and Apportionment.

A very large number of franchises were procured by persons who had neither the means nor the desire to operate under them, simply for the purpose of holding them in case at some future time the privilege would have value. There is a case on record of a franchise to construct a bridge across the East River having been awarded to a company by the legislature. No limitation of time was imposed and no steps ever taken to construct the bridge under the franchise. Nevertheless, when the City of New York decided to construct a bridge at or near the same point for which this franchise had been secured, the city was compelled to pay a considerable sum to the owners of the franchise in order to compensate them for the property right which their franchise gave them, and for which they had made absolutely no return to the state.

While it may be truly stated that it is a case of locking the stable door after the steed is stolen, the system under which public franchises can now be obtained in New York to-day fairly safeguards the public interests, providing the officials are honest and energetic. In the first place all the proceedings of the board which grants them must be public. All publications, when made, must be duly advertised in the City *Record*, which is the official publication of the city, and twice in two daily newspapers. A public hearing must be given at which objectors have a right to be heard. Subsequently the board must appoint a committee to inquire into the money value of the rights sought, and finally, when the terms of the contract have been agreed upon they must be published and a final public hearing given. Franchises must receive a vote of three-fourths of the board before becoming operative, and finally, they must have the approval of the mayor. In former times if the mayor vetoed a franchise the board of aldermen could pass it over his veto, and such action was frequently taken. As matters now stand the full responsibility for any franchise grant rests upon the mayor, because his refusal to approve kills the whole matter; thus is the power and responsibility centralized. It was inevitable that this systematization of franchise grants and the insistence upon fair terms for the city should much reduce the number of applications, and hence, as the development of the city requires a constant increase in its public service, public opinion has been progressing along new lines.

For a long time the impression has prevailed that the city should grant no further public franchises. The Citizens Union, which represents the conservative progressive sentiment in New York, incorporated in its platform, in 1901, the demand that the city grant no further public franchises, and resume those with which it had alienated, as rapidly as its financial condition would permit. In accordance with this declaration the Staten Island Ferry was municipalized, although the original plan did not involve municipal operation, it being the intention of Mayor Low and his advisers that the city should own the piers and boats and lease the operation for short periods, which seemed to be entirely feasible, the new administration, being of a different political complexion, concluded to take a step further and decided that the city should undertake operation.

The result of the action taken has been, on the whole, favorable to the contention of the advocates of municipalization, for while the ferry has, for reasons unconnected with its administration, been a charge upon the city, it has so largely improved values in the districts served as to recoup the city for the expense of its maintenance. Other franchises for ferries are being resumed by the city chiefly because, on account of the competition of bridges and tunnels their patronage has fallen to a point where they are no longer profitable. The result of all these tendencies has been to create a demand for the construction of the permanent features of public utilities by the city; the retention of their ownership in the city's hands, and the substitution for the former franchises which have created vested interests in the city's streets, of operating leases for short periods subject to revocation for failure of efficient service and resumption by the city on fair terms of compensation whenever the city shall so elect.

A principle, favoring this tendency, which has been seen only recently, is that all such improvements tend to increase the value of the land adjacent, and it has been pointed out that, if the widening of a highway, or the change in pavement from macadam to asphalt is a proper subject for assessment upon the benefited area there is no reason why the cost of such improvements as railroads, excluding equipment, of course, instead of being borne by the passengers, should not be collected from the owners of the property benefited. Indeed, a little consideration shows that especially in the construction of elevated or subway roads there are two distinct elements. First, the creation of an additional highway; and second, the transportation along that highway when completed. The second of these charges is the only one which should be borne by the passengers, as the first charge has already created values sufficient to pay for construction. The advocacy of such a principle would furnish an obvious check to reckless municipal construction of railroads, because they could only be run through districts which were sufficiently developed to pay for them. We may be approaching a period when the granting of franchises will be superseded by the granting of operating leases which will not have the character of irrevocable contracts which many of the present franchises possess.

If, however, the system of franchise grants is to continue, the most thorough and enlightened investigation of all applications should be insisted upon. It should always be kept in mind that there is but one side to a franchise: if the city makes a bad bargain the courts will hold it, but if the company makes an unprofitable bargain it can always go into the hands of a receiver to be relieved from its obligations. The fact that the streets of a city are real estate of great value, and that grants of rights in them, however, urged upon grounds of public convenience, are really conversions of public property to private uses is becoming more obvious to the people daily. Such wholesale confiscation of public property without adequate consideration, as disgraced the latter half of the last century, seems to be no longer possible, but there is always the danger that private interests may outwit the keenness of public servants, and therefore every franchise, however granted, should provide a clause permitting its own revocation upon terms fair to the grantor and grantee.

RECENT PHASES OF CHICAGO'S TRANSPORTATION PROBLEM

By Willard E. Hotchkiss, Ph.D.,
Northwestern University, Evanston, Ill.

At the time the author's previous article[1] on Chicago traction went to press, the situation seemed about to emerge from the state of perpetual chaos which had characterized it during the preceding two decades. To summarize briefly, the Yerkes domination in the north and west sides, dating from the late eighties, was contemporaneous with the lowest degradation of the city's political life. The signs of political revolt witnessed in the partial regeneration of the city council after the organization of the Municipal Voters' League in 1896 had been followed by an attempt to jam through the state legislature a fifty-year extension of franchises, many of which, under a compromise agreement of 1883, were to expire in 1903. The law that finally passed after public indignation had forced the legislature to modify its action, merely empowered the city council to extend franchises for that period. After many of its supporters had lost their seats in the political upheaval which followed, it was repealed by the next legislature without ever having been acted on by the city council.

Since their failure at Springfield in 1897 the companies have been largely on the defensive and have been face to face with a hostile public sentiment extending throughout the state. Their rights after the expiration of specific grants depended upon the so-called Ninety-nine Year Act, an ambiguous measure which it was claimed extended the franchises of the three original companies for ninety-nine years from 1865, the date of its passage. The denial of this claim by the United States Supreme Court in 1906 was in large measure responsible for the willingness of the companies to negotiate on a basis more favorable to the city than any which had previously been proposed.

The physical and financial aspects of the situation during the last decade have appeared, if possible, in even worse light than the political. The systems under Mr. Yerkes' control were knit together with a maze of community interests, leases, operating agreements, sales and other legal entanglements, and in the process were loaded with a weight of liabilities out of all proportion to investment. The retirement of Yerkes when the Union Traction Company was organized in 1899, and the subsequent bankruptcy of that company made "confusion worse confounded." Every attempt to compel unified operation of the companies under Yerkes, and later under Union Traction control, was steadfastly resisted, so far as service and issue of transfers were concerned. While the various financial and legal exploits were being consummated, deterioration of physical properties and neglect in other ways made the service from every point of view absolutely intolerable.

---

[1] Annals, Vol. XXVIII, November, 1906.

All of these facts are essential to an understanding of the municipal ownership sentiment which has shown itself so forcibly during the last decade and which now, when a settlement seems to be assured, has momentarily at least, in large measure subsided. The strong municipal ownership majorities of 1902, 1904, 1905 and 1906, as well as the tremendous popular agitation which forced a reluctant legislature to pass the Müller Law[2] in 1903, represented, in addition to the real municipal ownership sentiment, a protest against existing conditions. The Müller Law numbered among its stanchest supporters a large number of men who were theoretically opposed to municipal ownership, but who believed that without the weapon which the legal and financial power to municipalize would give, the city could never hope to make a satisfactory arrangement with private companies.

These men were not found among the supporters of Mayor Dunne and his immediate municipal ownership program in 1905. His election in spite of the opposition both of those who believed in municipal ownership as an ultimate goal, and those who regarded the Müller Law simply as a club, was naturally interpreted as a mandate to accomplish municipal ownership and operation at the earliest possible moment. After a year of friction between the mayor and the council, an ordinance was passed early in 1906, which provided for the issue of seventy-five million dollars of street railway certificates, to be a charge merely on the street railway properties and not on the general credit of the city. Such certificates had been authorized by the Müller Law in order that municipal ownership might be accomplished without infringing upon the city's constitutional and statutory debt limit.

---

[2] This law aimed to give the city the legal and financial power to accomplish municipal ownership. For its exact provisions see ANNALS, November, 1906, page 394.

The seventy-five million dollar certificate ordinance was approved at the spring election of 1906, but before that time the improvement in the city's position through the overthrow of the Ninety-nine Year Act had led to the reopening of negotiations with the existing companies. By September of that year the principles of settlement involving the mayor's proposals were accepted by the companies. It was agreed that the new ordinances should contain the following provisions:

1. Sale to the city of all tangible property and unexpired rights at a price to be fixed in advance.

2. Continued operation by the companies under revokable license.

3. Reconstruction of the entire system upon plans adopted by the city with concurrence of the companies.

4. Improved service to provide for: (*a*) unification of all routes; (*b*) through routes; (*c*) universal transfers.

5. Adequate assurance to the companies of the ultimate payment for present values of properties, and for additional investments, whenever the city should take over the lines.

6. Fair return upon present and future investments, with some share of net profits.

7. Remaining profits to go to the city as a sinking-fund for the purchase of properties.

The companies had at that time placed a total valuation upon their properties of over seventy-three million dollars, distributed as follows: The Union Traction Company, tangible property, $29,294,292; intangible, $13,825,040. The City Railway Company, tangible property, $20,103,936; intangible, $10,322,228. These valuations were considered much too large, and a board of expert engineers, consisting of Mr. Bion J. Arnold, Mr. L. E. Cooley and Mr. A. B. duPont, were commissioned by the city to evaluate the properties. The result of their evaluation was to diminish the companies' estimate to $46,652,747, exclusive of charges for paving, which, if included, would have brought the estimate up to $50,994,782, as against $73,555,675 demanded by the companies.

Negotiations were carried on for several months between representatives of the companies and the mayor and city council committee on local transportation, represented by special traction attorney, Mr. Walter Fisher. The question of compensation was finally solved by both parties agreeing to a valuation of fifty million dollars for all properties and rights, tangible and intangible. It will be noticed that this agreement conceded to the companies a very large part of their paving claims. The ordinance drawn up and agreed to by Mr. Fisher and the companies embodied practically all the provisions referred to above. It also contained minute specifications concerning rehabilitation, the establishment of through routes, character of service, financial operations, and placed the execution of the provisions largely in the board of consulting engineers. Several of the details, however, were felt by many, especially by the advocates of municipal ownership, to place very serious obstacles in the way of municipalization. Provision had been made only for the issue of seventy-five million dollars in Müller Law certificates, and it is estimated that, at the lowest, rehabilitation of existing lines would cost forty million dollars, bringing the amount necessary to finance a municipalization project up to ninety million dollars.

It had been suggested that in the event of failure to finance a plan of municipal ownership by means of the Müller Law certificates, the same result could be accomplished by organizing a company, *pro bono publico,* to take over the lines under the so-called contract plan. Such a plan was considered the more seriously because the supreme court of the state had not yet passed upon the constitutionality of the certificates feature of the Müller Law. In view of this situation, it is not surprising that the advocates of municipal ownership viewed with some misgivings the provisions of the ordinance which decreed that, in the event of municipalization, the city should pay to the companies in cash the full amount of the present valuation, plus any sums expended in rehabilitation of the lines, plus ten per cent contractors' profit, and five per cent brokerage over the actual cost of construction. For the contingency, moreover, of the properties being purchased, not by the city, but by another corporation, provision is made for the addition of twenty per cent to the price calculated as above. The additional twenty per cent is not to be charged, however, in case the prospective purchaser enters into a binding contract with the city which limits his beneficial interest in the properties to money actually invested, plus a five per cent profit and interest on the total sum. It is obvious that the provisions here outlined, especially in view of the city's financial situation, cannot fail to have a very important bearing upon the problem of municipal ownership. The action of the supreme court of the state on April 18, 1907, declaring the certicate feature of the Müller Law invalid, will make municipalization impracticable, if not impossible, for a considerable time to come.

The second point of contention between the city and the companies had to do with division of profits. The plan finally agreed upon provided that fifty-five per cent of net profits should go to the city and forty-five per cent to the companies. Obviously a provision of this kind depends for its value, so far as the city is concerned, upon the good faith with which it is carried out. Chicago has had ample demonstration of the way in which net profits may be consumed even by the most prosperous transportation companies. It was freely predicted by the opponents of the ordinances that no such profits would accrue. The provision upon which those who favored the ordinances relied for the security of the city's share of net profits was the feature creating a board of supervising engineers.[3] This board consists of three engineers, one appointed by the city, one by the companies, the third to be Mr. Bion J. Arnold, who is chairman of the board. It will be seen that the city practically appoints two members of the original board against the companies' one. With Mr. Arnold in charge, great confidence is felt for the security of the city's interests. Should a vacancy occur in the chairmanship of the board by Mr. Arnold's death, incapacity or resignation, specific provision is made for the selection of a chairman.[4]

Ordinances embodying these provisions were drawn up in favor of the Chicago City Railway Company for the lines on the south side, and the Chicago Railways Company for the lines under the control of the Union Traction Company on the north and west sides. Provision was made, moreover, that in the event of the Chicago Railways Company being prevented by legal obstacles from accepting its ordinance, the Chicago City Railway Company should acquire street privileges similar to those held on the south side in all of those streets in which the rights of the Union Traction Company or of its various subsidiary companies had expired.

---

[3] The board of engineers is given full power to control all expenditures for rehabilitation as well as complete supervision over the operation of the lines. The letting of contracts, the purchase of supplies, the sale of unnecessary property, and even the regulation of salaries is brought under its supervision and control.

[4] In case of the failure of the city and the companies to agree upon a person to fill the position of third engineer and chairman within thirty days after the vacancy occurs, the judges of the appellate court for the first district of Illinois may, upon application of either party, ten days' notice having been given the other party, fill the vacancy. The judges may also, at their discretion, remove the chairman after due notice and public hearing, upon the request of either party.

After substantial agreement had been reached between the mayor's counsel and the representatives of the companies, the advocates of municipal ownership, including Mayor Dunne, repudiated Mr. Fisher's work and came out for immediate municipal ownership, to be secured by condemnation proceedings. This was practically the position of the Democratic party with Mayor Dunne as its candidate for re-election in the municipal campaign preceding the election of April 7, 1907. The result of opposition on the part of municipal ownership advocates was a demand for a referendum, which was at first unwisely opposed by some of the leaders of the movement for approval of the ordinances. The sentiment in favor of the referendum upon all important measures is so well established in Chicago, due in part to the experience of the people precisely upon matters connected with transportation, that no wise political leader can afford to run counter to it. It soon became obvious that the demand could not be safely resisted; one hundred and eighty-nine thousand signatures were secured for a referendum petition. The ordinances, with minor amendments, were accordingly passed on February 5, 1907, to become operative when approved by popular vote. They were vetoed by Mayor Dunne and promptly passed over his veto at the next session of the council.

The action of the city council in passing the ordinances has been the subject of much discussion. Several amendments were offered for the purpose of further safeguarding the city, but inasmuch as the special traction counsel, Mr. Fisher, declared that everything had been secured which it was possible to persuade the companies to accept, there seems to be little doubt that the majority of the council were entirely sincere in preferring to waive these safeguards rather than cause defeat of the ordinances, since defeat, it was felt, would again plunge the traction problem into chaos. As to the division of the council, the men who have usually been classed among the ablest members largely supported the measures;

they were also supported by the remnant of the "gray wolf" element. Those who opposed them were for the most part men who have a record for honesty in the council. So far as the author is aware, there have been no serious charges of improper motives on either side.

The Republican party, after the ordinances were passed, came out squarely in favor of them and nominated for mayor Postmaster Busse, a machine politician of remarkable force and indifferent reputation for civic virtues. Party lines, however, were not closely drawn in the campaign. Many elements in the Democratic party were hostile to Mayor Dunne as well as to his position in repudiating the ordinances which his special counsel had drawn up. A considerable number of Republicans who favored the ordinances either repudiated the candidate for mayor or supported him reluctantly as a doubtful alternative against the incompetence of the Dunne régime. The ordinances carried by a vote of 165,846 to 132,720, while Mr. Busse's majority over Mayor Dunne was only about 13,000.

With the approval of the ordinances and the action of the supreme court in setting aside the certificate feature of the Müller Law, it only remained to disentangle the legal difficulties of the north and west side lines. The companies were given until July first to accept their ordinances. The City Railway Company promptly accepted its measure, but some of the bondholders of the north and west side companies declined to accept the reduced valuation occasioned by the overthrow of the Ninety-nine Year Act; this action threw the whole question of giving the Chicago Railways Company possession of the north and west side lines into the courts. It will be remembered that the result of Yerkes' domination in the north and west sides, and of the various manipulations incident to the transfer of control over these interests to the Union Traction Company, was a series of operating agreements, leases, community interests, and nearly all of the other devices known to corporation law. The value of the properties turned over under this series of legal mysteries was in many cases either fictitious or entirely unascertainable. The relation existing between the subsidiary companies, moreover, had become so absolutely entangled that there was no possibility of determining either the legal rights or equities of the various stockholders, bondholders, leaseholders and other claimants of the several companies. The bankruptcy of the Union Traction Company and its operation by a receiver had not clarified the legal situation.

It soon became obvious that no agreement would be possible in time to accept the ordinance on July first. Accordingly, an extension was granted to September fifteenth; meanwhile United States Circuit Judge Grosscup, under the jurisdiction of whose court the Union Traction receivership had been operated, together with Professor John C. Gray, of Harvard University, worked out a plan of compromise calculated to protect the equities of the various claimants. On July fifteenth the Chicago Railway Company petitioned the court to have the properties delivered to them under the plan thus formulated, and by decree of Judge Grosscup, issued August 12, 1907, the properties were ordered to be so leased. It was acknowledged that the new obligations created for the moneys to be expended under the ordinances would displace certain vested liens. On the other hand, since without the ordinances the rights in question would be practically valueless, the court was confronted by a situation in which, in the language of the judge, it was "unthinkable that a court of chancery is powerless to accept life, but has power only to accept a sentence of death, which a failure to accept the ordinances would practically mean."

On appeal to the circuit court of appeals, the order of Judge Grosscup was set aside by a decree of Justice Brewer, delivered September 7, 1907. This again threw the whole situation into uncertainty and made necessary a further request for extension of time, which was granted by the city council, with the warning that unless the Chicago Railways Company were in a position to accept the ordinances by February 1, 1908, their rights in the premises would at that time cease and determine and the ordinance would pass to the Chicago City Railway Company. Negotiations were again begun between the various interests, and finally an agreement was reached under which a decree of foreclosure and sale was issued by Judge Grosscup on December 26, 1907. On January 25, 1908, the various properties of the north and west side were sold at public auction to the Chicago Railways Company for an aggregate sum slightly exceeding two million dollars. On January thirty-first the decree confirming sale was issued just in time to permit the acceptance of the ordinance under the second extension. Since that time various rumors of a merger between the two companies have been heard, but as yet nothing of the sort seems to have been accomplished.

The legal tangles have naturally furnished an excuse for delay in the realization of improvement in service, especially in those portions of the city where improvement is most needed. Some of the through routes provided for in the ordinance have already been established, but for the most part, with the exception of a few new cars, and some improvement of the roadbed in certain sections, the city is enjoying so far essentially the same transportation facilities that it had two years ago. It is entirely too early to pass final judgment upon the outcome of the present arrangement under which the city becomes practically the partner of the companies in the operation and extension of its transportation system. Even under the most favorable circumstances, several years will be consumed in the rehabilitation of lines and the provision of adequate rolling stock. In the meantime, with the growth of the city, the transportation problem is becoming constantly more acute, and by the time the construction of subways is undertaken, the need for enlarged facilities will unquestionably be just as urgent as is the need for improvement of surface lines at the present time.

There are several features of the situation presented by the acceptance of the new ordinances regarding which it is perhaps even now possible to pass judgment. The experience of the first eleven months operation under the new ordinance of the Chicago City Railway Company would seem to indicate that the city may fairly expect considerable revenue under the present arrangement.[5] It seems probable that the powers lodged with the board of supervising engineers are adequate to protect the city's interests in this regard, at least so long as the board is constituted as at present.

Several interesting questions have arisen concerning the status of the problem under the present ordinances. The spring campaign of 1907 brought to light a variety of divergent views upon this question. It was emphatically asserted by the framers of the ordinances that the city was not granting a franchise, but a license revokable at will. Those who opposed the ordinances as well as those who believed that, with all their shortcomings, they constituted the best arrangement feasible under the circumstances, were of the opinion, on the other hand, that in their practical operation they would prove to be twenty-year franchises, and franchises to which more or less onerous conditions as to purchase were unfortunately attached. In this connection it is interesting to note that, in an advertisement of bonds of the City Railway Company sent out by the Harris Trust and Savings Bank on July 1, 1907, the company is spoken of as possessing a twenty-year franchise, and particular emphasis is laid, as would be expected, upon the provision for purchase only upon payment of cash for the present valuation of the properties, plus improvements, with an increase of twenty per cent if purchased except for municipal operation.

---

[5] Information which became available after the above was written shows the city's share of net receipts of both companies during the first year of operation under the new ordinances to have been nearly one and one-half million dollars.

Of course, over against the assumption, which now seems to be fairly general, that the companies are operating under a twenty-year franchise, the fact remains that should the abuses which have in the past prevented the establishment of adequate transportation facilities be continued, the city has, in the place of a maze of conflicting rights and claims, a perfectly definite contract which gives it an unquestioned legal right to purchase at any time upon six months' notice. If intolerable service continues, there seems little doubt that the cry of municipal ownership will be revived, in which case, sooner or later, some means of financing the enterprise would without doubt be devised, however advantageous and profitable to the companies might be the terms of sale. On the other hand, if the board of supervising engineers should prove to be an efficient regulating commission, there would seem to be no reason why a reputable transportation system should not soon be realized.

Whatever future action may be necessary to secure, under favorable conditions, a satisfactory transportation system, the ordinances under which the two Chicago companies are now operating mark an advanced step in the direction of safeguarding by definite and minute specification the interests of the public. Whether or not this method will ultimately characterize the most efficient form of public regulation, it is the author's opinion that the approval of the present ordinances, after careful discussion pro and con, first by experts, then by the city council and finally by the people, amply bears out the assumption that the history of the transportation problem in Chicago may rightly be considered a study in political evolution.

Candid critics will probably all agree that the present ordinances contain a number of serious faults. It is to be expected, moreover, that experience under them will bring to light other faults not less serious. They are essentially compromises, not only between the city and the companies, but between the different shades of opinion upon the subject of municipal ownership. Not all provisions, desirable in temporary measures preparatory to municipal ownership would be equally applicable to twenty-year franchises. To cite a single illustration, agreement, forced or voluntary, upon a price for existing properties and rights was absolutely indispensable to the accomplishment of municipal ownership, either immediately or within the next two or three years. It is not clear, however, that after the companies have enjoyed ten or twenty years of profitable operation, the coming generation will regard with entire favor the obligation to pay in case of purchase an amount which constituted a liberal price for properties and rights in existence in 1907.

In spite of their imperfections the ordinances under which the two Chicago companies are now operating mark an advance step in the direction of safeguarding, by definite and minute specifications, the interests of city and public. Whether this method alone will ultimately characterize the most efficient form of public regulation is perhaps doubtful. It is not improbable that in Chicago, as elsewhere, bodies charged with the execution of specific provisions, as is the board of consulting engineers, will need to be reinforced by a commission to which is delegated the broad regulative power of state or city. Whatever future action may be necessary to secure, under favorable conditions, a satisfactory transportation system, it is the author's opinion that approval of the present ordinances, after careful discussion pro and con, first by experts, then by the city council and finally by the people, when compared with methods of dealing with transportation matters in past years, amply bears out the assumption that the history of the transportation problem in Chicago may rightly be considered a study in political evolution.

PUBLIC SERVICE CORPORATIONS OF NEW ORLEANS

By Solomon Wolff,
New Orleans, La.

As in most of the cities of the United States, the public service corporations of New Orleans furnish the city with electric light and power, gas, telephone service, street railway transportation, and water.

Electric Light, Power and Gas.—Electric light, power and gas are furnished by private corporations, which have obtained franchises from the city. These are not exclusive grants and do not contain provisions regulating the cost of service. In the commercial section of the city there are two companies furnishing electricity, and as a result of the competition the cost of the service in that section is much less than it was before the competing corporation began operations. The cost in that district is also much less than it is in those sections where the competitor has not yet laid its wires. The wires of both companies are laid in underground conduits in the commercial districts, elsewhere they are as yet strung on unsightly poles above ground. I am not prepared to discuss why this is permitted, or why the company—whose lines extend all over the city—is permitted to charge more for current in the sections of the city where it has no competition, than in the other portion where it must meet the rates of a rival.

The gas company has no competition at all, because there is only one company, and its plant is leased by one of the corporations furnishing electric current. Notwithstanding this, the cost of gas is now much less than it was before the gas works were leased to the present corporation, the price since 1905 being $1.15 per thousand, against $3.33 in 1897. The decline was gradual. The company furnishes gas for illumination and other pŭrposes at the same rate, though down to 1902, the rates charged for the two kinds of service differed greatly, notwithstanding that all gas was delivered through the same mains and pipes, but through different meters.

Telephone Service.—Telephone service is also furnished by a private corporation, operating under a franchise which is not exclusive. Several years since a franchise was granted to a competing corporation, and for a short time we had lower prices and all the trouble incident to a double telephone service. Business concerns were compelled to use both systems, many residences did the same thing, and though each service cost less than now, the total expense to the public was greater. As far as I am informed these franchises were granted without compensation, but there is some obligation to furnish service for the various offices of the municipality at certain rates. The present company has done away with its competitor, though the franchise of the latter was drawn to prevent amalgamation. The service is generally declared unsatisfactory, though of late there appears to be some improvement. The rates are perhaps not higher than those prevailing in other cities as large as New Orleans.

Street Railway Service.—The entire street railway service of the city is at present controlled by a single corporation. Until a few years ago, this service was furnished by several independent companies, which to some extent at least, competed with each other. This partial competition resulted in service superior to that which is furnished now.

Even so conservative a journal as the *Times-Democrat*, a few weeks since, found it proper to say that it was necessary to do much "to change the deplorable conditions" into which the service has fallen. The strictures from less conservative sources and the public generally are much more severe. The street railway service of the city presents some peculiar phenomena. There are about 325 miles of street railways in this city. Before the consolidation these were owned by perhaps fifteen different companies, most of which were paying dividends on the stock, and at the same time furnishing excellent service. By some transaction peculiar to high finance, all but a very small part of the stock in all these companies was acquired by the new company, the capitalization was largely increased, bonds were issued, etc., but although expenses of management were cut down and other economies were made possible by the consolidation, and although the city has gained considerably in population, and the cars are crowded with passengers, as they never were before, the company's preferred stock is down to about

$25.00 a share, while its common stock is at present about $10.00 a share, and, during the height of the money stringency last fall, sold at about $6.00 a share.

One finds it difficult to understand this. To repeat, the receipts of the company have increased, still its rolling stock and roadbed have deteriorated. The only possible explanation is, that the bonds of the company—on which interest has always been paid—really represent the entire present value of the plant. Stock represents the future possibilities. The franchises of the company are very valuable. As each one expires, it must, under the law, be sold by the city to the highest bidder. The only stipulation in those franchises is that cars must run on a certain schedule. These schedules are, however, so generous to the company, that it can easily comply with them, and yet furnish a service far from adequate. It may be added that the same corporation which runs the street cars, owns the "electric light and power company," and has leased the gas works. It will, therefore, be apparent that it is in fact, if not in name, a monopoly.

Water Supply.—The water supply of the city is at present, and has been for several years past, in the hands of a corporation, whose franchise was annulled by decree of court. Its affairs are at present conducted by a receiver, appointed in the federal courts, at the instance of a foreign bondholder. The whole subject is interesting, and a brief historical review may not be amiss. By an act of the legislature, approved April 1, 1833, the Commercial Bank of New Orleans was incorporated and charged with the duty of providing a waterworks plant and system for the City of New Orleans, which it immediately proceeded to do. By the terms of the act, the city subscribed five hundred thousand dollars to its capital stock, and paid for the subscription by issuing to the bank its bonds for that amount, bearing five per cent interest and due in forty years. The Commercial Bank ceased doing a banking business many years ago. It laid in the streets of the City of New Orleans about sixty-five miles of water pipes. On the 19th of January, 1869, it sold and transferred the water works to the City of New Orleans and the city, in payment therefor, issued to the bank its bonds to the amount of one million ninety-three thousand and four hundred dollars, bearing 5 per cent interest and due in thirty years.

The city operated the works from January, 1869, until the 9th of April, 1878, at a loss. The engines, pumps and pipes were very much out of repair, much favoritism was shown. Although the city was growing, the pipes were not extended into the newly built-up portion of the city. By Act 33, of 1877, the "New Orleans Waterworks Company" was created, with a nominal stock of two million dollars. The charter contained the provision that the company should not charge more for the supply of water to the inhabitants than the City of New Orleans had charged previous to the 9th of April, 1878, and that it should extend the water pipes through all of the streets then inhabited, and from time to time, through such streets as might be built up, whenever the income from the sale of water would equal 10 per cent of the cost of the extension. The stock was issued to the city, and the city in exchange therefor issued its own outstanding bonds and floating indebtedness, ultimately retaining, and at present holding, three thousand nine hundred and twenty-seven shares out of the total twenty thousand shares.

The company then began operating the waterworks. During the term of its existence it laid approximately sixty-five miles of new pipes. It never furnished pure and wholesome water, although under obligation to do so. Nor did it confine itself to the charges to which it was limited by its charter, nor did it at any time lay water pipes through all of the inhabited streets of New Orleans. The result was that in the year 1899, there were about four hundred miles of inhabited streets without any water supply whatever. The legislature, in 1898, appointed a committee to investigate its affairs, and as a result of the investigation, adopted a resolution authorizing the attorney general to bring a suit to forfeit the charter and franchises, which latter gave the company a monopoly of the water supply of New Orleans for fifty years from the 1st of April, 1878.

On the 6th of November, 1901, the Supreme Court of Louisiana rendered a final decree, forfeiting the charter and all the franchises of the said company.[1] This judgment became final and executory by a refusal for a rehearing on the 3d of February, 1902. On the 4th of November, 1901, a bill was filed in the United States Circuit Court by an English subject, owning one hundred and twelve thousand of the second mortgage bonds. The bill recited the decree of forfeiture rendered by the Supreme Court of Louisiana, and claimed that the decree of forfeiture of the charter should not affect the rights of the bondholders. The corporation and its officers consenting, the judge of the United States Circuit Court appointed a receiver, who took charge of the plant, and since then has been operating it. There is, however, no franchise, and the receiver is able to sell water only because people must have it. When the municipal plant described further on is completed, the New Orleans Waterworks Company will not furnish water to anyone, and its plant will be almost worthless.

---

[1] 107 La. 1.

Since the appointment of the receiver, the rates have, by order of court, been fixed at those established by city ordinance and the charter granted the company. So successful has his administration been, or as some have it, so high have been the rates, that the receiver has, in addition to operating expenses, been able to pay some sixty thousand dollars for legal expenses, one hundred and ten thousand dollars of floating indebtedness, and six hundred and forty-five thousand dollars of mortgage bonds, with accrued interest, all the time paying dividends on the capital stock.

The sad tale of official ineptitude and inefficiency displayed by the municipal authorities who conducted the waterworks while the city was the owner; the manipulation by which the city has in some way disposed of all the stock it held except about four thousand shares, the failure of the corporation to live up to its obligation to furnish pure water, to extend its mains, etc., is told more or less fully in the opinion of the Supreme Court of our state, in the case of the State of Louisiana *v.* New Orleans Waterworks Company[2], rendered in November, 1901. Its recital here would hardly prove interesting or of service, except as the "horrible example" at a prohibition meeting may be of service. I may add that a public-spirited lawyer of this city—Benjamin R. Forman—has done more than any one else to relieve the city of the burdensome franchise which the waterworks company held.

Municipal Ownership of Water, Sewerage and Drainage Plants.—I now come to a phase of municipal activity of considerable interest to the student of city life and progress. The City of New Orleans is at present engaged in constructing its drainage,

[2] 107 La. 1.

sewerage and water plants and is to operate them as departments of the municipality. Because of the peculiar topographical condition, there is no natural drainage. There had been some effort to drain by the construction of drainage canals and pumping stations, but the effort was not successful, and until 1896 no general system had been devised. Bad as was the drainage of the city before the installation of the present system, the method for the disposal of sewage was even worse, a description of the conditions which existed and which still exist to a considerable extent would not prove of value, but, as will be seen further on, conditions are improving daily and steadily, as the sewerage system which is being built approaches completion.

The level of the territory occupied by the city is lower than either the Mississippi River at high water in front, or the storm level of Lake Pontchartrain in the rear. Against overflow from both sources the city is protected by dykes or levees, as they are locally called. The territory from the river to the lake—a distance of about seven miles—is, with the exception of two slight ridges—Metairie and Gentilly—a dead level and flow of drainage water or sewage can be secured only by giving the canals and sewers a certain incline down from the surface. When this incline has reached a certain depth below the level of the starting point, the water or sewage is raised by powerful pumps and again started on its downward journey until, in the case of the drainage water it is finally pumped into Lake Pontchartrain, and in the case of sewage into the Mississippi River.

Early in 1893, the city council had adopted ordinances under which topographical surveys had been ordered, and the city engineer had been directed to prepare a complete and comprehensive plan for the drainage of the city. Later an advisory board of engineers was named, other changes were made in the personnel, and in 1895 there was presented to the city council a plan for the drainage of the city. This problem, under the advice of engineers, was always treated separately from sewerage, because of the peculiar topographical situation.

At its session in the spring of 1896, the legislature of the state created a drainage commission to take charge of the drainage of the city, and provided certain revenues with which to carry out any system which should be adopted. This board adopted the plan prepared under the ordinance of the city council, by which it was proposed to drain the city of rain and other surface waters. A considerable part of the system has been built and under the management of the board, conditions have been vastly improved. The unsightly open gutter has largely disappeared, giving way to subsurface drainage, and where formerly the ground was so thoroughly saturated with water, that—except on the ridges already mentioned—the dead were laid away in tombs, erected above ground, we now find it possible and practical to build underground cellars ten or twelve feet deep.

As yet, however, nothing had been done to improve sewerage conditions and to give the city a supply of more and better water than was being furnished by the "New Orleans Waterworks Company." A movement in that direction was inaugurated in 1898, the immediate cause being the yellow fever epidemic of 1897. The ordinary taxes levied by the city were not sufficient to meet the probable outlay, and under the law, special taxes could not be imposed without submitting the question to the taxpayers. The law further provided that the city council must submit the issue to the taxpayers, whenever a petition for the purpose, signed by not less than one-third of the taxpayers was presented to it.

In April, 1899, such a petition was presented, and it contained provisions for the rate of the special tax, the term during which it should endure—all as provided by law—and it further provided that the water and sewerage system should be constructed by a board. The council ordered the election of the board and the special tax was voted by an overwhelming majority of taxpayers. The tax authorized was two mills on the dollar for a term of forty-three years. It was manifest that the work could not be undertaken if the fund at the disposal of the board was to be collected in instalments extending over a period of forty-three years. It was therefore proposed to fund the tax—that is, issue bonds the payment of which both in principal and interest would be met by the two mill tax. To do this it was necessary to have the sanction of the general assembly of the state.

The governor called a special session in 1899, the necessary legislation was passed, and to avoid any possible doubt of the validity of the bonds the issue was subsequently submitted to the people of the entire state for ratification, in the form of an amendment to the constitution. The water and sewerage board was constituted, elaborate plans were prepared, the bonds issued, and construction of the water and sewerage plant begun. In 1902, the drainage commission was merged into the "Water and Drainage Board" and drainage, sewerage and water supply are all now administered by that authority.

Originally it was believed that sixteen million dollars in addition to the amount already spent by the drainage commission would suffice but this was soon found inadequate, and the amount has been increased to twenty-four million dollars, to be spent on the water supply and sewerage plant, and to complete the system of drainage. The board is composed of seven commissioners, appointed by the mayor, with the consent of the council from the seven municipal districts, the mayor himself and several other officers being ex-officio members of the board.

At present the sewerage system is more than half built. Gradually,—as yet but slowly,—house connections are being made with the sewers, where the work has progressed sufficiently, but this branch of the work cannot be actively pushed until the waterworks plant is completed. Work on this is also progressing steadily, and the end of the year may witness the beginning of operations by the municipal water plant. The source of supply is the Mississippi River. The water has been declared wholesome by high authority. Extensive reservoirs and an elaborate filtration plant have been provided, to rid the water of the large amount of sand and other impurities which the Mississippi River carries, and the people are assured that an ample supply of clear and pure water will be furnished.

As yet it is too soon to say, that this experiment in municipal ownership has been demonstrated a success, but it may be said that the board consists of men of the highest character, who serve without compensation, that the work so far done, has been done well, without the slightest intimation of graft or favoritism or politics, and, since it is but fair to judge the future by past achievements, the people of the City of New Orleans may confidently look forward to success in this important experiment in ownership by the public of utilities which, in their very nature, are monopolistic and therefore properly the subject of public and not private exploitation.

All this means much for New Orleans. We have a delightful climate. We are too far south for severe cold weather, and the temperature in summer is moderated by the breezes from the Gulf of Mexico. Compare the temperature of New Orleans with that of other large cities in the United States, and almost daily you will find it several degrees less. With our city paved, drained and sewered, with a plentiful supply of pure and wholesome water, no city in the United States is superior as a place of human habitation.

Along its front the Mississippi River for many miles furnishes a harbor unsurpassed anywhere. The network of rivers which flow into the Mississippi, and the Mississippi itself, as well as the numerous railroads which center in the city, make it the natural port of entry for the export and import commerce of the Mississippi Valley. Nature has done its share for the Crescent City; if its inhabitants come up to their civic obligations New Orleans is certain to become one of the great cities of the world.

CHICAGO NEW CHARTER MOVEMENT—ITS RELATION TO MUNICIPAL OWNERSHIP

By Hon. Milton J. Foreman,
Chairman, Chicago Charter Convention.

At the November election, 1907, a law providing a new city charter for the municipality of Chicago, embracing important municipal ownership and home rule features, was submitted to the voters of the city and rejected by them. This law had been prepared by what was known as the "Chicago Charter Convention," a body composed of representatives of the different interests concerned. The proposed new city charter was the result of long and tedious discussion and many compromises. It did not represent the ideal, but was presumed to embody the practical. Its defeat was accomplished by the intrusion of subsidiary issues and not by reason of any defect in it as a working organic law for the municipality.

To convey a philosophical comprehension of the new charter movement, it is necessary first to explain the defects of the Chicago local government system which the promoters of the new charter hoped to ameliorate, if not entirely remedy. The state constitution of Illinois, adopted in 1870, avoiding the then existing abuses of special legislation, was made to embrace a drastic provision inhibiting legislation of a special character. This amounted to saying that there should be but one general incorporation law for the cities of the state. No latitude was given to the general assembly in making laws to differentiate, as was needed, according to the population of cities. At the time the incorporation law was enacted the City of Chicago embraced, approximately, one-tenth of the population of the State of Illinois. A few years after, finding its special charter inadequate to its requirements, it voluntarily relinquished it, and stepped upon the general incorporation act. At the time this was done the population of Chicago was somewhat near one-eighth of that of the state. From this small relative proportion, Chicago has grown until at the present time its population is nearly one-half that of the State of Illinois. With growth in number the people of Chicago have found, more and more, that the provisions of the general incorporation act are inadequate to its urban requirements. Efforts to change that law so that it would meet the necessities of a great metropolis have encountered great opposition, because any change made in the law for the purpose of accommodating Chicago must also apply to cities of the very smallest class. This condition of things was oppressive, not only to the people of Chicago, but also to those of the minor cities of Illinois. Both classes of cities were bound together, hard and fast, by a rigid constitutional requirement, which compelled them to travel in the same harness at the same pace, without regard to what their natural conditions might demand. Such laws as were enacted were grotesque compromises, efforts at averages, somewhat such as might have resulted from an attempt to make a suit of clothes that would fit both a giant and a child.

Another condition sought to be remedied was that arising from the fact that Chicago, owing to the requirements of the present state constitution, embraces within its territorial area numerous municipal governments which do not always co-operate, which are sometimes at direct conflict, and which, to a great extent, duplicate civic functions. I will not attempt to discuss these in detail any further than to enumerate them so that the reader may form a proper basic idea of the consolidation which the Charter Convention hoped to accomplish.

First, there was the City of Chicago, existing, as I have explained, under the general incorporation act. The County of Cook, which could not be changed without a constitutional amendment, embraced the City of Chicago entire, but had a large territorial area outside of the city limits. The sanitary district of Chicago is a municipality erected for the purpose of providing sanitary drainage for Chicago and contiguous urban territory, and is a taxing body entirely independent of the other municipalities embraced wholly or partly within Chicago. The territorial limits of the sanitary district are not coterminous with those of Chicago, or of Cook County. In addition to the municipalities alluded to, there are also in Chicago, or were until a recent date, town governments, having the same characteristics as the towns of the most rural portions of the state. Not long ago these municipalities were abolished as far as was found possible. But the fact that the parks, another sort of municipal government, were in part predicated upon the co-operation of park and town officials, and because there remained fragments of town debts, it was necessary to preserve the town governments so far as these particular functions were concerned.

A third condition which, by the adoption of a new charter, Chicago hoped to escape, was the limitation upon the city's bonded debt creating powers. Under the constitution of the State of Illinois local indebtedness is not permitted to exceed five per cent upon the taxable value of the property within the municipality creating the debt. At the time this condition was established, the law required that all property be valued for taxation at its full value. Since that time the legislature has seen fit to enact a law which makes the taxable value one-fifth of the full value. Our supreme court has decided that the bonded debt limit rests, not upon the full value, but upon one-fifth, or so-called "assessed" value of the property. The effect of this, it will be seen, is to limit the amount of bonded indebtedness which the municipality of Chicago can assume to one per cent upon the full value of property, subject to taxation within its limits. But while this is true in relation to the City of Chicago, it is also a fact that the County of Cook, the sanitary district, the parks and towns, and perhaps the school system, are each separately entitled to issue bonds to the extent of one per cent of the full value of taxable property within their respective territorial limits.

To escape these onerous conditions, to disentangle the complicated and embarrassing legal difficulties arising from an incongruous governmental system, to erect in its place a homogeneous local government, was the purpose of the new city charter movement.

I have alluded to the fact that the obstacles which lay in the way of Chicago's obtaining from the legislature a city charter adapted to its urban requirements, arose from the fact that the constitution of the state contains certain restrictive provisions. Therefore, the first step in the new charter movement was necessarily an amendment of the constitution whereby the general assembly would be empowered to dissociate Chicago from the rest of the state in legislation for cities. A movement which had grown apace with the increasing embarrassment arising from the city's inadequate charter took the form of an effort to procure a constitutional amendment. The burden of this labor was resumed by the Chicago Civic Federation, which secured a joint resolution for the submission of a constitutional amendment. However, it is necessary to say that the amendment, as proposed by the Civic Federation, was not permitted to pass the legislature. I have spoken of that portion of Cook County which lies outside of the City of Chicago. To all intents and purposes, it has some of the aspects of a sovereign political entity, without the consent of which it was then, and probably now would be, impossible to bring about the consolidation of the city and county governments within the City of Chicago. At any rate, the amendment submitted by the Civic Federation was changed by the legislature so that it would not provide for the consolidation of the county with the city government. Acting upon the theory that half a loaf is better than none, and that, by inching along, step by step, the ultimate purpose of reform could eventually be accomplished, the change was accepted and the amendment was submitted to the people, and adopted by them at the election of 1904. This progress having been secured, it became possible to secure legislation for the City of Chicago as a separate legislative subject independent of other cities of the state. The many advantages of this amendment have not been impaired by the failure of the people of Chicago to adopt the new charter which was submitted to them. But the amendment itself does nothing in the way of actually bringing about consolidation of local governments, or increasing the bonding powers of the City of Chicago.

The general assembly which convened in 1905, after the adoption of the constitutional amendment, found itself face to face with the problem of providing a new organic law for Chicago. Further, municipal ownership was then a burning issue. Many crude and conflicting measures, as well as others deserving much consideration, were proposed at Springfield. But before consideration of them had progressed far, it became obvious that it would be impracticable for the legislature to give to the charter question that amount of attention which it imperatively demanded. There was danger that ill-advised laws might be enacted which, instead of helping, would make a bad matter worse. Out of the conflict and confusion of ideas, the collision of good and inconsiderate motives, the conviction forced itself upon each and all that Chicago, having asked for a new charter, should itself prepare what it deemed best adapted to its needs, and having done so should lay the same before the legislature and ask for its enactment into a law. The practical effect of this conclusion was to transfer the matter from the halls of legislation at Springfield to the city council and other municipal bodies at Chicago.

During the progress of the events narrated, there rapidly developed demands from this, that and another quarter for variant and vagarious features to be engrafted in the proposed new city charter. It was obvious that the Chicago city council, like the legislature, would be unable to grapple with the multitudinous and far-reaching phases which must be considered in the formation of a new organic instrument for the city. The suggestion was made that a charter convention be organized and convened, and that to this body be committed the entire task of preparing a bill embodying a new chapter to be submitted to the general assembly for enactment into a law. The idea of a charter convention was readily accepted, and an unofficial body composed of representatives from the various municipal and state interests concerned was quickly formed.

Avoiding details, I will say that the work of this body was faithfully and expeditiously performed, and much credit is due to the intelligence, forbearance and spirit of compromise and concession manifested by the many diverse interests represented in it.

A bill embracing the new charter as formulated by the convention was sent to Springfield, and at the session of the legislature in 1907, was enacted into a law. However, as I have indicated in my explanation of the constitutional amendment, this and all other laws enacted under that amendment, before becoming valid and operative, have to be submitted to and approved by the voters.

We now come to a consideration of the proposed charter as prepared by the Charter Convention, adopted by the legislature and voted on and rejected by the people of Chicago. The amendment to the constitution of the State of Illinois, as I have already explained, made it possible for the state legislature to enact laws exclusively applicable to Chicago. Therefore, the making of the new charter was not in any way interfered with by the provision of the constitution against special legislation. A method for consolidating the several taxing bodies in the City of Chicago, as permitted by the amendment, was not difficult to devise, and was readily provided. At the same time, when the constitutional amendment made it possible to legislate for Chicago alone, it also provided that the city's municipal indebtedness might be permitted to reach an amount equal to five per cent of the total full valuation of all taxable property within the city. But before this provision became operative, consolidation of two or more taxing bodies was declared by the constitutional amendment to be necessary. Therefore, the financial relief of the city's government was involved with, and depended upon, the success of the consolidation features. The constitutional amendment provided that in case of consolidation the municipal debt of the bodies so combining with the city should be merged with and become a part of the city's debt. The total of the existing city debt, thus consolidated and combined with the county's and sanitary district's debts the constitutional amendment required, should be deducted from the total amount which, under the amendment, the consolidated city's debt was permitted to attain. Thus, it will be seen, the total amount of debt which the municipality of Chicago might have incurred after consolidation would have been, including the debts of the consolidated and other municipalities, not in excess of five per cent of the full value of the taxable property in the city.

In addition to making it possible to increase the city's bonded debt, the new charter provided a new tax limit. Under the laws governing taxation in the City of Chicago certain limits are fixed and in relation to other taxes no limits are established. The new tax limit proposed in the charter was slightly more than the amount of taxes which were, at the time the charter was voted upon, actually being collected. But the limit fixed by the charter was very much less than the limit established in existing laws. The unfortunate shortsightedness of the public led many to the conclusion that the charter would actually increase taxes beyond what the rate might be under the old laws, and this misapprehension induced them to vote against it. Since the defeat of the charter, another tax levy has been extended, and in a large proportion of the city the taxes now actually being collected are in excess of the limit which the new charter would have established. After much contention and earnest, faithful consideration, the Charter Convention deemed it wisest and best to incorporate in the charter for the government of primary elections, the law then prevailing under statutes throughout the state. No attempt was made by the charter makers to interfere with the general election laws of the state, and probably they would not have been able to do so if they had so essayed.

Not much change was attempted to be made in the city's civil service regulation system. Experience in the administration of the city affairs had demonstrated what had already become equally well known in other states and cities, namely, that under civil service rules removals from the service are sometimes hedged about with so many difficulties that the law is made to operate to protect the unfit as well as the fit. It is everywhere recognized that the process of securing satisfactory public servants in minor positions depends upon elimination as well as selection. The change sought to be made by the proposed city charter would have made possible the removal of unsatisfactory employees without preferring specific damaging charges against them. Persons removed in this manner would have been given opportunity to offer proof to re-establish themselves in the positions from which they were discharged.

In dealing with the question of municipal ownership and operation the Charter Convention was presented with a half-determined problem. The work of making the charter, it should be recalled, began during the latter part of the year 1906. In 1903, the legislature of Illinois had enacted a law authorizing cities to acquire, own, construct, lease and operate street railways and to provide the means therefor. This law could not become operative until it should be adopted by a majority of the voters at an election for that purpose. Chicago voted to adopt the law at its municipal election, April, 1904. From this it will be seen that the municipal government of Chicago had already in existence a law whereby it might under certain conditions, proceed to take over and operate street railways within the city limits. So far as the traction question was concerned, the Charter Convention had but little to do, but it dealt with the question of municipal ownership in relation to other public utilities. That is to say, it provided that the City of Chicago should have full power and authority to own, maintain and operate any public utility for the use of the city. This provision included street and other intramural railways, subways and tunnels, telephones, telegraphs, gas and electric lighting, heating, refrigerating and power plants. Other features of municipal operation were provided—docks, warehouses, etc. Provision was also made for the fixing of rates and charges for service rendered by all public utility corporations. For the purpose of acquiring public utilities, or other property necessary or appropriate for the operation thereof, either by purchase, condemnation or construction, it was provided that the city might borrow money and issue negotiable bonds, pledging the faith and credit of the municipality. But it was also provided that no such bonds should be issued unless the proposition to issue them should first have been submitted to the electors of the city and approved by two-thirds of those voting thereon. As an alternative to pledging the general faith and credit of the city, the proposed charter provided that, in lieu of issuing bonds, the city might issue and dispose of interest bearing certificates which should under no circumstances be the common obligation or liability of the city, or payable out of the general fund belonging to the municipality. On the other hand, they should be payable solely out of the revenues or incomes to be derived from the public utility property for the acquisition of which they were issued. The certificates, as described, were to be in the nature of first mortgage bonds, and should constitute a lien upon all the property which they were issued to purchase. It was still further provided that no such certificate should be issued for the purchase of any public utility until after the question of their issuance had been approved by a majority of the voters voting upon the question.

While these provisions of the city charter were being prepared, the question of municipal ownership and operation of the traction properties under the general law to which I have alluded, was coming to a head in the city council. As an outcome of that matter, traction franchise extension ordinances, the antitheses of municipal ownership, were submitted to the voters of the city at the April election, 1907, and approved by them. This was in fact a negative vote as to municipal ownership. This vote, as I have said, was taken in April, 1907. It is easy to be seen, therefore, that at the November election in the same year, when the proposed new city charter was submitted to the voters, the municipal ownership question was destined to cut rather an insignificant figure. As a matter of fact, the submission of that question by the new charter did not appear to revivify the question from its disastrous defeat in April.

The whole municipal ownership question in Chicago narrows down to this: We have on our statute books the so-called "Mueller Law," which provides that, under certain conditions, the city may take over and operate street railways. An attempt to do this resulted in defeat. It is believed that there is some legal doubt as to whether or not, under the law, the same question can be submitted again and again to the voters.

While these events have been in progress, a five-year contract has been made with the gaslight company whereby its rate has been fixed. A twenty-year franchise has been granted to the telephone company on the basis of decreased prices. Reduced prices and other regulations have been provided and accepted in case of the electric lighting companies. Thus it appears that the public utility and municipal ownership and operation questions in Chicago are, for the present at least, practically settled and at rest. Agitators are casting about for other propositions.

The most novel, and what appeared to me to be the most valuable, feature of the defeated charter was the fact that it laid a foundation for a complete system of municipal home rule in Chicago. The constitutional amendment, under which the charter was drawn, provides that no law shall become operative until it shall have been submitted to and approved by the voters of the city. From this it followed that, not only the first draft of the charter must have popular approval, but also that all changes of the charter which might afterwards be proposed, whether in the form of ordinances or in the form of state laws, which might change the charter, would be subject to referendum, that is to say, all powers which the legislature could constitutionally delegate to the city council, except as to taxation and public utilities, were delegated, and ordinances adopted under this provision would, when accepted by the voters, act as amendments to the charter. Carried out methodically and persistently, this would eventually have given to Chicago a charter practically of its own making. Not only would it have been made by the Chicago city council, but its details would have been passed upon by the people themselves. Municipal home rule, put into effect in this manner, would have made Chicago an exception among American cities, and would have forever divorced it from legislation enacted by legislators from rural constituencies who, no matter what may be their honesty of purpose, are not qualified to devise laws for congested populations. It is true that the constitutional amendment still permits the legislature to enact laws which, on being approved by the voters of Chicago, will become operative. Such laws may be enacted hereafter, but they will not be part of a homogeneous system of home rule as would have been the case if the city charter had first been adopted as a nucleus.

I now come to perhaps the most complicated and embarrassing obstacle which the Charter Convention encountered. I refer to the matter of saloon regulation. I have already stated that the constitutional amendment provided that any and all laws which might be enacted under its provisions would be submitted to the voters of the city for rejection or approval. This was a broad and liberal provision for home rule. But, enticing and advantageous as it was, it proved to be a stumbling block to the charter success. In Chicago, as in every large city, there are troublesome phases of saloon regulation, and no sooner was the charter problem taken up for solution than these problems presented themselves. After much consideration and many plans and compromises to satisfy all interests in the convention, the state legislature refused to permit a submission of the necessary questions to the voters.

When all is said and done, Chicago is simply in the position of having attempted to draft a charter in harmony with the constitutional amendment and secure its adoption. That it failed of adoption is not surprising as such things go. It is especially not surprising when all the disturbing and conflicting factors entering into the contest are taken into consideration. It was defeated, to be sure, but it is not a final defeat, for to-day, or to-morrow, or at any time in the future, a new charter can be prepared and submitted to the voters for their approval or rejection. And this proceeding can be repeated until a satisfactory organic law for the government of the city is secured.

THE PUBLIC SERVICE COMMISSIONS OF THE STATE OF NEW YORK

By Horatio M. Pollock, Ph.D.,
Professor of Political Science in the New York State Normal College, and General Secretary of the Civic League of Albany.

To secure adequate and efficient public service at a just rate of compensation has been one of the most perplexing problems that the American people have attempted to solve. The rendering of public service is a business not subject to control by competition. In the main, such service is monopolistic. It is true that there may be a certain amount of competition between railroad companies, gas companies, telephone companies and the like, but as a regulative agency competition between public service corporations has been a failure. A cutting of rates in such competition is usually followed by inadequate service, by the failure of the weakest corporations or the merging of the competing corporations into one. Where the service is such that by nature it can be performed only by one or two corporations at the same time no reliance can be placed upon competition as a means of securing adequate service or reasonable rates. Competition acts effectively only in business that is open to a large number of persons on equal terms, and even in business of this nature, it is fast giving way to co-operation.

As competition cannot act as a regulative factor in public service industries, it follows that some other means must be sought to insure proper service. Up to the present time the natural requirements of the service and public opinion as expressed by newspapers and petitions of organized bodies have served to maintain a certain degree of efficiency in public utilities, but such control is uncertain and inadequate. Every public service corporation relies on the patronage of the public for its income, and in cases where the service is such that it can be accepted or left alone at will, the income of the company depends largely upon the satisfaction that the public derives from the service rendered. All public service, however, is not of such a nature. The people of a city are obliged to use the water furnished by the municipal water works; they are practically obliged to use the gas furnished by the municipal gas works; they must patronize the municipal street railway or suffer great inconvenience; they must use the local telephone service or resort to primitive office methods. The company rendering services such as these has the public at its mercy. If not restrained by law or franchise regulations it may charge for its service "all the traffic will bear," and may render such service as it deems most practicable. The American city and the American state have in too many cases been the prey of such unrestrained corporations. Although the legislatures of the various states have always possessed the power to regulate rates within constitutional limits, they have been slow to exercise the power for the benefit of the people, and too often have been influenced by the corporation lobbyist more than by the welfare of their constituents. To a very large extent the public service corporation in this country has had a free hand. The distinction between public business and private business is a comparatively recent one. The people now, however, are fully aware that such distinction exists and are no longer depending upon the natural regulation of the business conducted by public service corporations. The let-alone policy is forever discarded.

In place of the let-alone policy, two methods of control are developing—the one may be termed complete public ownership and operation; the other, public regulation. As an example of complete ownership and operation, we have the water supply systems of most cities and towns. As a rule these works are built by public money and managed by public officials; all the work connected with the operation of the system is performed by persons in the direct employ of the city or town, except in case of construction, where the work is often performed by contract under the direction of a public official. Of all public utilities the supplying of water to municipalities is the one that has seemed best adapted for public ownership and operation. It is also safe to say that, although many municipalities have experienced great difficulty in securing a sufficient supply of pure water, the system of public ownership of water works has been a decided success. In other lines of public service, however, public ownership and operation through the government of the municipality has not met with so great favor, although it is being tried on all sorts of public work. At present there is undoubtedly a decided tendency toward increasing the absolute control of the people over their public utilities, but the change is not rapid and the tendency may be checked by the introduction of new methods of public regulation. One of these methods is the subject of this article.

The State of New York during the past year has adopted the most comprehensive and best devised plan for regulation of public service corporations ever tried in America. By the passage of an act known as the public service commissions law, in the spring of 1907, the legislature of the State of New York practically delegated its legislative power relative to the public service corporations named in the act to two public service commissions known, respectively, as the Public Service Commission of the First District and the Public Service Commission of the Second District. The public service commission for the first district was given jurisdiction over the territory comprised in the City of Greater New York, viz., New York, Kings, Queens and Richmond counties. The public service commission for the second district was given jurisdiction over the remainder of the state. Each commission consists of five men appointed by the governor with the consent of the senate, and after February 1, 1909, the term of each commissioner will be five years. To these commissions were given over the powers previously exercised by the railroad commissioners, the commission of gas and electricity and the state inspector of gas meters, and to the public service commission of the first district was given the powers previously exercised by the rapid transit railroad commissioners of New York City. Other functions not previously exercised by any state or local authority were also conferred upon the last-named commission. This commission, in describing its power in its report for 1907 (page 8), makes this statement: "This commission has a dual character. Upon the one hand, it has most full and complete powers of regulation over all public service corporations; upon the other, it has the important task of planning and constructing, possibly also of equipping and operating, rapid transit lines, whether subway or elevated. So far as the transportation problem is concerned, therefore, the commission has two strings to its bows. It may build subways, as its predecessor the rapid transit board did, and it may order existing companies to increase their service, adjust fares and freight rates, improve their equipment, etc., a function which neither the rapid transit board nor the railroad commissioners had to the extent which this commission now possesses and has been exercising for the past six months." It is evident from this statement of the powers of the commission that its creation is a most comprehensive effort to secure for the people of Greater New York an adequate means of controlling, regulating and creating public utilities in accordance with the needs of the city.

From the foregoing statement it is seen that the public service commission of the first district, although created by a state law and appointed by the governor, is in reality a city commission. Its jurisdiction is confined to Greater New York, and the problems with which it deals are all municipal problems. The public service commission of the second district has a wider range of territory to deal with and a greater variety of matters to supervise. Its power in no case, however, extends to the construction of public works. It has, therefore, no power corresponding to that possessed by the commission of the first district in the construction of rapid transit lines. Aside from this function, the commission of the second district has fully as great responsibility as that of the first district. As an example of such responsibility may be cited the matter of permitting the construction of the new Buffalo, Rochester and Western Railway, which is now pending. This line if built will parallel the New York Central and West Shore railways and will connect with the Boston and Maine at Troy and with the Wabash at Buffalo. The commission of the second district has absolute authority to decide whether this road may be constructed. Both commissions are authorized to fix maximum rates for public services, either upon application or upon their own motion, to investigate accidents, to order improvements in any phase of the public service under their jurisdiction that does not meet required standards, to authorize or refuse to authorize bond and stock issues, to supervise the expenditure of money raised by such issues, to require a uniform system of accounting of public service corporations of like character and to prosecute through their counsel corporations refusing to comply with their orders. A proposed amendment to the present law giving the commissions jurisdiction over telegraph and telephone companies is now before the state legislature.

It is clear that these public service commissions are endowed with extraordinary powers. Within the commissions are included the three divisions of government. In establishing rates and promulgating rules for the conduct of public service corporations they perform a distinctly legislative office; in devising plans for new subways and in letting contracts for their construction, or in testing gas, and gas and electric meters, their work is administrative; in hearing complaints, making investigations, listening to arguments on disputed points, issuing orders and rendering decisions, their functions are judicial.

Unfortunately, under the form of government in New York State, a decision of the commission cannot be final. Its conclusions and orders are subject to review by the courts, and, although it may be questioned whether any court in the state is as well constituted to decide justly on the questions in dispute as the commission, the right of appeal to the courts cannot be denied under the constitution. The act providing for the commissions takes the probability of court appeal into account and provides that cases arising under the act shall have preference over all other cases (except election cases) before the court regardless of their position on the calendar.

There are two phases of the work of these commissions that are somewhat experimental. These are the fixing of rates and the regulation of stock and bond issues. In fixing a rate for rendering public service, the commission performs a function that has heretofore been performed mainly by the legislature itself. It is true that a movement in this direction was instituted when the legislature in 1905 authorized the state commission of gas and electricity to fix the maximum prices to be charged by gas and electric companies for their products, but the powers possessed by that commission were trifling compared with the powers now resident in the public service commission. To fix a maximum rate for gas and electricity is comparatively easy; to prepare a schedule of rates for freight and passenger service on different lines of railroad, and under varying conditions, is a most perplexing problem. Strange to say, rate-making on the part of railroad and express companies has never been reduced to a scientific basis. The railroads in making their rates have not been guided by the cost of the service rendered, but by the probability of securing patronage at the rate charged. No satisfactory study has yet been made of the relative cost of handling the different classes of freight. Neither has there been a satisfactory conclusion reached as to the adjustment of railroad expense between passengers and freight. The most intricate matter with which the Interstate Commerce Commission has had to deal has been the fixing of rates, and it was on this rock that the first interstate commerce law was wrecked. The courts failed to sustain the commission, and the law and the hard work of the commission went for naught. The public service commission of the second district is now studying the problem of passenger rates on the various railroads of the state, and in its report has discussed some of the matters involved in the fixing of the rates. In order to obtain the point of view of the railroads in the matter, the commission held hearings at various points in the state and examined the several representatives of the railroad companies relative to their methods of fixing rates, but the hearings resulted only in pointing out the fact already stated that the railroads themselves had no adequate basis for the establishment of the present schedule of rates.

The view expressed by the commission that adequate service is more important than a low rate is undoubtedly correct. The people desire to ride in safety and comfort and to travel in trains that run on time. Accidents, delays and public discomfort ought not to be tolerated in the present state of civilization, and the people are willing to pay a rate for railroad service that will be sufficient for the railroad to maintain a high degree of efficiency.

In fixing maximum rates for gas and electricity, the commission is likely to be much more successful, but in all rate-making the commission will probably be superseded by the courts, and, judging from the experience of the Interstate Commerce Commission, the work of the public service commission in this respect is not likely to be satisfactory, either to the commission itself or to the general public.

A much brighter prospect is before the commission in its work in the regulating of stock and bond issues. The greatest abuses in railroad making and railroad management in this country have been the stock deals of the great financiers who have used the railroads as playthings. If the plan outlined in the New York public service commission law is carried out, the railroads of New York State will no longer be a source of financial plunder. The public service commissions propose to know what is to be done with the money raised by public service corporations by the sale of stocks and bonds, and they are going to insist that the money so raised shall be used for the purpose for which it is procured. Railroads will be required to report to the commission the disbursements made of all moneys received from the sale of stocks or bonds.

Not the least among the services to be rendered by the commission is the oversight of railway equipment for the purpose of securing safety and proper dispatch of business. The work of the commission with reference to steam engines is a good illustration. The commission has in its service a boiler expert with a competent corps of assistants. These men inspect and test boilers of new locomotives and investigate the causes of all boiler accidents. The commission has established rules for the care of steam boilers and has required railroad companies to have the boilers of all engines used on their lines inspected at least once in three months and reports of such inspections forwarded to the commission. By these means it is hoped that every defective boiler will be eliminated from active service. The commission is extending a watchful eye over all kinds of appliances used by public service corporations and will order the improvements or modifications demanded by present-day conditions.

The regulation of freight car service is another important function of the up-state commission. The regulation of such service on railroads doing interstate business is one of the puzzling matters awaiting solution by the Interstate Commerce Commission, and the public service commission is likely to experience equally great difficulty in securing satisfactory results in the intra-state traffic. While there is little hope for a complete solution of the car service problem, the commission will undoubtedly be able to render great service to shippers by its study of the question and will probably render valuable assistance to the railroads as well. There seems to be a commendable desire on the part of the railroads to meet the standard of service set by the commission.

As a regulator of the public service corporations of the smaller cities of the state, the public service commission is likely to be much more efficient than the state legislature or city councils have ever been. To secure the passage of a bill through the state legislature for relief from the undue exactions of the street railway or municipal gas or electric company, it required all the influence that could be exerted by the citizens of the city, and often two or three years would be consumed in securing the desired action. By the present plan, the abuse, whether it be large or small, may be laid before the public service commission, and will receive proper attention and be corrected with the greatest possible dispatch. In work of this kind, the commission constitutes a board of arbitration with power to secure the enforcement of their awards. As such it will prove a great boon to the smaller cities of the state.

Will the New York plan of controlling public service corporations prove successful? Judging from the work done by the two commissions during the first six months of their existence, there seems to be great probability of the ultimate success of the method. The great obstacles will be the secret deals of political managers and the agents of the great corporations. The present commissions are composed of exceptionally high-minded men, men of tested integrity and efficiency. Their devotion to the public service stands forth on every page of the reports recently issued by them. Unfortunately, commissions of this character are exceptional in public service. The New York state railroad commission, which was abolished by the act creating the public service commission, was a type of the usual set of appointive officers. They were in the main men with no particular fitness for the work for which they were appointed. Most of them were active workers in their political party, and were given the appointment either as a reward for past favors or as a retainer for future work. This railroad commission was in existence twenty-four years but at no time during its history did it have the full confidence of the people or the railroads. It did some good work, but it could not be counted upon to act in a large way in regard to any matters that were likely to influence votes for any political party. It may be useless to consider the probability of the deterioration of the present public service commissions to the low standard of the commissions they succeeded, but no one with an intimate knowledge of the conduct of political affairs in this country can hope for the long continuance in office of men chosen for their character and special fitness who do not render political service to the party responsible for their appointment. We may fondly talk of the merit system and indulge the hope that future governors of New York State will act with the same independence and wisdom that Governor Hughes has manifested, but so long as political parties are dominated by the spoilsmen, our talk and hope are likely to be in vain. A governor of the domineering or tyrannical type would lose no time in rendering the public service commissions subservient to him. He would give them to understand that he must be consulted on every important matter, and that no independence of action would be tolerated. A governor of the spoilsman type would be likely to fill up the commissions with the worst class of minor political bosses. Manifestly, it would be in the interests of a political party to be able to exert direct control over the vast corporations of the state, and the spoilsmen would not be slow in recognizing this fact. The power that the commissions have to deal leniently or strictly with the railway, gas and electric corporations gives the party which controls the commissions a most powerful weapon. New York State has had governors that were ready to use weapons of this kind for their own advantage, and, not strange to say, some of the public service corporations stand ready to join hands with the unscrupulous politicians in an effort to render the statutes worthless. With such men in authority, if it could be brought about by a deal between the politicians and the public service commission that certain valuable privileges would be granted, or certain issues of stock be made, whereby the corporation would be greatly benefited at the expense of the public, there is no doubt that the deal would be made. It is well known that such has often been the case. New York State insurance department for many years rendered but little service to the public, owing mainly to the fact that the department was a political asset rather than an agent for the protection of the great body of policy holders. The insurance investigation revealed the fact that large sums of money were annually spent by all of the large companies for the purpose of securing political protection. If a mutual insurance company will go to such lengths in order merely to increase its volume of business and secure an advantage over its competitors, what may we expect of a public service corporation which is in a position to reap enormous benefits if allowed to plunder the public?

The hope of the ultimate success of the public service commissions depends upon the maintenance of their character and integrity. In the final analysis, the success of the plan rests with the people of the State of New York. If they continue to elect governors who are fearless and independent, they will undoubtedly secure a large measure of success in the management of their public service corporations. On the other hand, if a reversion is made to the ordinary type of governor, it is more than probable that another form of managing public utilities will have to be sought. It is most fortunate that the commissions have started so well. If the men now in office are permitted to do their work unhampered for three or four years, the results obtained will be so clearly manifest that the public will demand a continuance of the same standard of work. Let us hope that such may be the case.

RESTRICTIVE LEGISLATION AGAINST PUBLIC SERVICE CORPORATIONS IN NEW JERSEY[1]

By Frank Bergen,
General Counsel for the Public Service Corporation of New Jersey,
Newark, N. J.

I am one of those who believe that the good will of the public is a valuable asset for a corporation; that the public after all gets the better of the bargains commonly made by corporations and municipalities and for that reason I look upon the hostile sentiment in which the companies have recently been compelled to work as a two-fold injury—injurious to the public by retarding the work, and injurious to the companies for the same reason. Whoever, therefore, seeks to create or aggravate thoughtless hostility for any reason cannot be regarded as a discreet friend of the people, even if he is acting in good faith.

Before commenting on the legislation at present being proposed in New Jersey, it may be helpful to recall one or two facts often overlooked in discussing the imperfections of our corporations. During the past thirty years the legislature of this state has enacted a series of statutes designed deliberately to give greater freedom to corporations than was enjoyed in former years; to invite capital to make its domicile here, to offer security to enterprise and investment, and to render it forever unnecessary to resort to direct taxation to support the government of the state. Neither political party is entitled to a monopoly of the credit or to the odium of this legislation. It was enacted in compliance with a policy written in the constitution by the people themselves in mandatory language in the autumn of 1875.

Among the amendments of the constitution adopted in that year is this: "The legislature shall pass no special act conferring corporate powers; but they *shall* pass general laws under which corporations may be organized and corporate powers of every nature obtained," subject, of course, to alteration, amendment and repeal. Since that amendment was adopted the growth of the state in population and in commerce and industry has been amazing. Governor Stokes in his last message to the legislature gave some of the figures, and they clearly show that if it is one of the legitimate objects of statesmanship to obtain for the people plenty of the so-called good things of this life the policy I have referred to was an immense success. Let me read a passage of two from the swan-song of the retiring governor. I like to read his pure and lucid English. He says:

---

[1] Address on Public Utility Bills before the New Jersey Senate committee on municipal corporations, March 2, 1908.

"From 1870 to 1906 the population of our state has grown from 907,000, to nearly 2,250,000. During the same period the capital invested in manufacturing interests has increased from $80,000,000 to $715,000,000; the number of wage earners from 76,000 to 267,000; the amount paid in wages, every year, from $33,000,000 to $129,000,000; the value of the annual product of manufactured goods from $170,000,000 to $175,000,000.

"In 1870, 58,000 horse-power furnished by 2,000 steam engines and other motors turned the wheels of industry, while to-day 9,000 steam engines and motors are employed, with an aggregate of 460,000 horse-power." It would be difficult to find in the history of civilization a more gratifying record of prosperity.

I do not say that this amendment to the constitution and the statutes I have referred to were unwise—much less, wicked—as some incendiary agitators throughout the country have said, for I have learned that good and evil consequences flow from every grant of freedom; that tares and wheat still grow together. What I venture to suggest is that it would be unwise, in a moment of ill-humor, to burn the wheat-field to get rid of the tares while thousands are in want of bread; and what I object to is the purpose, rampant until recently, of suddenly reversing this policy and visiting its iniquity (if there is anything wrong about it) entirely on those who accepted the state's invitation and its hospitality.

The legislation now under consideration indicates a radical change of policy. Instead of inviting it frightens capital; in place of security it proposes confiscation. Whatever may have been the purpose of the authors of these bills, the mere threat of such legislation as this has closed mills, restricted industry, destroyed credit, appointed receivers, and turned thousands of worthy people out of work. These bills propose to adopt policies that were condemned by the people in 1896, and again in 1900, and later still by actual experience in other states. Mr. Bryan said the other day, and I think truly, that recent events have shown that the party of which he is the peerless leader is not the only one under which the country can plunge from the summit of prosperity to the depths of disaster and distress. But he omitted to add that the débâcle occurred just as he began to accuse the party in power of stealing his political ideas and writing them in the statute books of the country.

But this is not all. The Crimes Act will be much enlarged if this legislation passes. Besides the law, orders of the commission are to become criminal statutes. Disobedience is a misdemeanor punishable by fine or imprisonment. The guilty and the innocent are united in condemnation, and our captains of industry hereafter, if they dare to do anything, must work in the shadow of the penitentiary. I will read a paragraph or two from the bill introduced by the senator from Hunterdon. It is a valuable contribution to the literature of this discussion, because the senator states boldly and plainly what the other bills mean. Section 64 of the senator's bill is in these words: "64. The officers and directors of all public utility corporations are hereby deemed and declared to possess and to have knowledge and notice of the various acts, deeds, conduct, commissions and omissions of all and singular, their superintendents, managers, agents, servants or any other employees, so far and insomuch as any of such acts, deeds, conduct, commissions or omissions are or may be in any way related to the operation, management or control and conduct of any business or branch thereof engaged in or in any way carried on by any public utility of this state. Any violation of the several provisions of this act or any violation of any regulation, ruling, or order issued by the board, by any of the foregoing superintendents, managers, agents, servants or any other employees, of any public utility, shall be and the same are hereby declared to constitute the act, deed, conduct, commission or omission of the officers and directors of such public utility or utilities; and such officers and directors of such public utilities or utility shall be deemed and held responsible both criminally and civilly for any such violations, as aforesaid, and no plea of personal ignorance, nor actual personal ignorance of any such aforesaid violation or violations shall enable any of said officers or directors to escape any civil or criminal liability which may or which shall result by or through any violations of the several provisions of this act."

This bill, for the first time in the history of the criminal law, states as plainly as language can express intention, that innocence shall not constitute a defense to a charge of crime. Hundreds of acts, no matter how trifling, that heretofore have been nothing but neglect or disobedience of orders issued in the course of business, are made crimes by these bills, and the officers and directors of the corporations, which these bills make victims, are declared to be guilty of crimes, although they knew nothing of the act or neglect which is said to constitute the crime. Who would dare to serve as a director or officer of one of these corporations if such a bill should pass, or who else would feel safe in a state where such a bill could be passed?

I have spoken of this bill as a valuable contribution to this discussion because it indicates clearly the spirit in which these bills are written. Another of these proposed measures in effect proposes to revive the thumbscrew and the rack in a less repulsive form than in the olden days. It undertakes to force citizens of New Jersey to become their own accusers. These bills, if they truly represent the dominant public sentiment of this country, would seem to indicate that we are entering upon a mild revival of the French Revolution. The wealthy and the prosperous are to be hunted and banished as enemies of the Republic. Innocence is not to be a defense any longer. All that the prosecutor will have to do is to prove that the defendant is a director of one of the corporations referred to in these bills, and that somebody else committed the crime, probably some one whom the defendant never saw or heard of. Indictment is to take the place of the guillotine—perhaps because our Committee of Public Safety think it more humane to blast a man's reputation than to cut off his head. We have already made some progress in this revolutionary process. The Reign of Terror has been revived, and already extends over the industry and commerce of the country.

These bills are drawn upon the theory that property owned by public service corporations is private for the purpose of taxation and public for the purpose of management and control. Under the pretense of regulation they propose to appropriate the property of the companies subject to their provisions. The value of property consists in its use, the control that the owner has over it and its income. If you must let another man control and use your property as he pleases, your legal title to it becomes merely a worthless shell.

But we are told that it is proper for the state to confiscate property belonging to the class of corporations mentioned in these bills because they exercise franchises derived from the state. That claim cannot bear serious examination. A franchise is simply permission given by statute to establish and carry on a certain kind of business just as other kinds of business may be established and carried on under the common law. It is true the state can withdraw the franchise, although in view of the modern practice of accepting payment for franchises it would be an act of bad faith to do so, but the state cannot touch the remaining property. As all kinds of business are carried on under the protection of the law, statute or common, and cannot be carried on otherwise it would (if the argument I refer to is sound) be an easy matter to appropriate or destroy all of the property in the state by simply refusing to protect it in the hands of its owners any longer.

Let us press the argument a little further and see where it leads. If the state should disband its militia and all the police forces in the state, discharge all its constables and peace officers, and pass an act making it unlawful for a man to use a lock on the door of his dwelling, store or stable, or to employ watchmen to guard his property, the effect undoubtedly would be to destroy private property to such an extent that nothing really could be called private property except what a man might be able to protect by his own physical strength. The state perhaps has a right to do all these things just as it has a right to withdraw its protection from the money invested in the property of certain corporations, but there is no more justification for doing so in their case than in the case of farmers, merchants, manufacturers or owners of real estate. Many things are constitutional that are not expedient. But if this new theory of the ownership of property should be confined for the present to the property of corporations only, why should it not be extended to the property of all corporations instead of a few? A very large part of the capital belonging to the people of this state is invested in corporations other than those mentioned in these bills. They also exercise franchises, and it is quite as competent for the legislature to force those corporations to dissolve or divide their property with the public as it is to require a street railroad company to do so. The argument contemplates anarchy. Of course the gentlemen who advocate these bills, having been caught and confused by an economic whirlwind, do not clearly see where the course ends which they wish you to pursue.

The moment legislation goes beyond regulation and assumes control and management of property it to that extent appropriates the property and violates that provision of the constitution which declares that "private property shall not be taken for public use without just compensation first made." There is no exception to that wholesome provision. Again it is said that legislation of this character is not restricted by the constitution but is justified by the "police power," a strange growth that has enlarged on the body politic in recent years, sapping the vitality of constitutions and statutes and the security of all property. Mr. Justice Brewer, of the Supreme Court of the United States, noticing this tendency, spoke of it in a recent opinion as follows: "It seems to me that the police power has become the refuge of every grievous wrong upon private property. Whenever any unjust burden is cast upon the owner of private property which cannot be supported under the power of eminent domain or that of taxation it is referred to the police power, but no exercise of the police power can disregard the constitutional guarantees in respect to the taking of private property, due process and equal protection, nor should it override the demands of natural justice."

Still again we are told that as some of these franchises have turned out to be much more valuable than they were supposed to be when granted, or rather that the business established by the corporations holding such franchises has prospered more than was expected many years ago, therefore the state has a right to repudiate its part in these transactions and seize so much of the property as represents the unexpected success. No state capable of realizing the turpitude of such an act will ever commit it. The state should indemnify corporations against loss, if it intends to appropriate a part of their profits. If the success of an enterprise using a franchise justifies the state in seizing and appropriating the accumulated property or any part of it, why should not the government of the United States reclaim every acre of farm land

and every building lot in the valley of the Mississippi. That land was either given by the government to actual settlers or sold for a dollar or so an acre. It is probably worth a hundred times as much to-day. A few years ago the late Henry George argued with much skill that the increased value or "unearned increment" of real estate belonged to the public, but he never persuaded any state to seize it. The same policy when directed against corporations and supported by weaker arguments does not seem to be quite so shocking.

Look around for a moment and see the consequences of the agitation that has for its object such legislation as this. There is not, so far as I know, anywhere in the state, a single business enterprise or plant worth speaking of, now in course of construction, that would, if it existed, be subject to any of these bills. Nothing of the kind has been commenced within two years; not a new gas, electric light or water works or street railroad, not even a steam railroad, has been planned and commenced within that time; and improvements and extensions of existing plants of that character have been stopped or restricted within the narrowest possible limits. Why has this creeping paralysis extended all over the state? Because those having money to invest realize the danger of investing in a corporation that can be bled pale by taxation and have its income reduced by so-called regulation to an amount not much, if anything, above what its customers wish to pay. No business can be carried on successfully on such terms.

While the preaching of these incendiary doctrines frightened and injured only the millionaires riding in their club cars and in Pullmans, the people were taught to rejoice as they saw the mighty falling. By and by when the stress of commercial and industrial disaster began to press heavily on the commuters and the plain people, we were assured that only the wealthy wicked had any real or just cause of alarm; but now when thousands of locomotives and freight cars are rusting on the side tracks and the gravel trains have come in and discharged their crews, we are comforted with a strange application of Lincoln's inspired utterance that the judgments of the Almighty are just and righteous altogether.

The good sense of the legislature of this state has heretofore been a sufficient protection against legislation of the kind proposed; although we are not without a little experience. In the year 1892 an act was passed to create an electrical commission. In print it looks as well as any of these bills now pending; but it was not so comprehensive, as it applied only to companies engaged in the electrical business. Still, it reads as if it had been written by a strong committee of the best friends of the people. I will not stop to relate its history or its reputation except to say that it became one of the most odious scandals of that scandalous age. Statutes like that were called "dandy" legislation in the political jargon of the day. It was passed a year before the race track laws appeared on our statute books, and was repealed the same day when they were repealed. You may find the four repealers printed closely together in the early pages of the pamphlet laws of 1894.

Those who are urging the passage of these bills do not remember that legislatures such as now sustain the state, have not always controlled its destiny. They have forgotten the history of the early nineties, and that history has a bad habit of repeating itself. There is not a single safeguard in any of these bills that cannot be swept away in twenty-four hours. It is nearly always unwise to crystallize passion into a statute. Twelve years ago an act was passed making it a criminal offense for any street railroad company, except those companies that were already engaged in that occupation, to carry freight or express matter on its cars. Ten years later an act was passed to authorize the carrying of freight and express matter on trolley cars after obtaining consent of the municipalities along the line. No trolley company except one has attempted to operate under that act, and the benefit that the people of the state might have obtained by a wise treatment of the subject has been lost for a dozen years, and no one can tell when, if ever, that convenience will be obtained. Again two years ago a bill was passed to limit the term of franchises granted to public service corporations to a period not exceeding twenty years, or forty when approved by a popular vote. The next legislature passed another bill to extend the term for which such franchises might be granted in certain localities to fifty years. In the haste of its passage its constitutional defects were not observed, and another bill is now pending to accomplish the same purpose in a constitutional manner.

Another act was passed a year or so ago to prohibit the issue and sale of securities of such corporations except on certain terms, and the first bill passed by the present legislature is a relaxation of the rule therein laid down. I mention these instances, not to condemn their purpose, but to point out the error of passing bills affecting the vital interests of the state without the most careful deliberation. The people of New Jersey may count themselves very fortunate indeed that our legislature during the past few years, while this plague of hysteria has been raging throughout the country, has refused to be swept off its feet, and therefore we have as yet but little crude and vicious legislation on our statute books.

The advocates of the bills now proposed, however, seek to justify their position by reference to the so-called Hughes bill enacted by the legislature of New York about a year ago. The effect of that statute and its value to the public are slowly coming to be understood. The author does not show the slightest experience in the organization, construction, maintenance or operation of any of the plants of corporations with which the law deals. The technical education and skill required for that purpose and which have been acquired by a generation of experience through failure and success are entirely unknown to him. His knowledge of such matters had been obtained entirely from books. Subsequently the bill was tinkered into a little better shape than that in which he had left it and hastily passed. The rushing sentiment of the time did not permit rational and deliberate discussion of its scope and probable effect. Two commissions were appointed under the law, consisting, no doubt, of the best men whom a high-minded governor could impress into the public service. One of these commissions began operations in the City of New York and shortly precipitated a great street railroad system into the hands of receivers, destroying the remaining credit of the company and giving it another excuse for failing to cope successfully with an impossible problem. Already a very liberal transfer system which existed in New York is being restricted by the breaking up of the system of street railroads that was controlled by the operating company. This is part of the price that the people must pay for the pleasure of seeing the company in the hands of receivers and its securities sinking out of sight. The commission operating in the city has unearthed and republished a great deal of scandal, sparing neither the living nor the dead; but the substantial benefit that the people looked for from that legislation is still invisible. The commission is entitled to credit only for the improvements in the service since their appointment which the company would not have made if the commission had not interfered. I am informed that not a car has been purchased by the company since the commission was appointed; not an improvement made that had not been planned before. We all know that the transportation system in New York has been a constant evolution of improvement, from the old Broadway stages and the horse cars lighted by lamps, carpeted with wet straw, and not heated at all (taking forty-five minutes to run from the City Hall to Forty-second Street), to the electric street cars, elevated railroads and subways of the present day. Those improvements were made by the companies, and the process of improvement seems to have been stopped instead of expedited by the commission. It is true that about a million and a quarter dollars have been expended by both commissions, and I am told that more than a million and four hundred thousand dollars have been called for to continue their campaign for another year. I shall not characterize their work—no doubt a little more experience will do that sufficiently. The public has gained nothing, the holders of the securities of the company have suffered seriously; and the rascals who plundered its treasury are still at large.

One of the gentlemen who were here recently advocating the passage of these bills seemed to rejoice that the street railroad system of New York was in the hands of receivers and that other companies in the same class were also in that predicament. He seemed to think that destruction and bankruptcy are among the legitimate purposes of such laws. They certainly have that effect. Within the past few days applications have been made to the court of chancery of this state for the appointment of receivers for three trolley companies engaged in constructing a line diagonally across the state from Camden to Elizabethport. We are obtaining some of the benefits of this kind of legislation even before any of these bills are reported for passage.

There is not now, and there never was in this state, any genuine public sentiment demanding the passage of such bills as these. The bills, artificial sentiment and all, are importations. They are aimed at abuses that no longer exist and at methods that are no longer practiced. There is not a single promoter, as far as I know, now roaming about the state plying his calling.

No one is soliciting a so-called franchise from any municipal body to construct, or even to extend, any plant operated by companies that are referred to in these bills. All we ever needed in this state was a wisely drawn statute regulating the issuing of securities by public service corporations. Experience has shown elsewhere, and would show here, that the operation of such properties cannot be carried on successfully by the dual control of a commission and a board of directors. We were taught long ago that no man can serve two masters. Neither can a corporation.

I represent especially the Public Service Corporation of New Jersey, which was formed about five years ago for the purpose of providing additional capital immediately needed in large amounts to reconstruct, better equip and extend large systems of street railroads and gas and electric properties. That company has never put one drop of water in its stock or in the stock of any company which it controls. The par value of its shares is $100, and $100 in cash have been paid into the treasury of the company for every share of stock that has been issued. Since that company obtained control of the street railroad, gas and electric properties I have referred to, it has expended tens of millions in their betterment. It has twice raised the wages of its employees on its street railroad system, without solicitation—without asking—simply to aid them to meet the increased cost of living which we all know has occurred in recent years. During the same period the price of gas and of electricity has been repeatedly reduced in many parts of the state, and trolley fares also, notwithstanding the increase in the cost of fuel and raw material, which the company needs in large quantities in the conduct of its business. Millions have been spent, and millions more are needed to put these properties in a more satisfactory condition in order that they may render better service to the public and become more valuable to their owners. The companies controlled by the Public Service Corporation pay a little more than $1,000,000 annually in taxes. They employ more than 8,000 citizens of New Jersey, and pay out daily in wages the sum of $22,500; more than $600,000 every month and over $8,000,000 a year, and the other companies that would be affected by these bills pay out still larger sums to a still larger number of our citizens.

The duty of the hour, as I understand it, is to provide work for the unemployed. A few days ago a bill was introduced appropriating the sum of $10,000 a year to establish free employment agencies in various cities throughout the state. The bill is a bit of pure paternalism; but I think it is necessary to pass it. How can those having the welfare of the state in charge pass bills of this sort and then strike a vicious blow at the sources from which the working people of the state and their families now obtain a large part of their livelihood? It is not only humane, but I think prudent, for the state not to injure the industries that are still active, but to exercise all of its healing and paternal powers. It would be a kindness to the advocates of such bills as these to do so, because when the idle get hungry they may discover who are responsible for their distress.

I am convinced that the wisest course to pursue would be to lay all of these bills aside for the present until we find out what real benefit, if any, the people of other states shall obtain from similar laws which they have passed. That course would save at least one hundred thousand dollars the first year. Besides, it would save and enhance the state's reputation for sanity and conservatism. A year or so hence we will be able to see more clearly what value there is in legislation of this character, and then if we still think that we must copy from the law books of other states we can at least have the satisfaction of copying their wisdom and not their mistakes.

THE FINANCES OF THE DISTRICT OF COLUMBIA

By W. F. Dodd,
Washington, D. C.

Before 1871 Congress took little interest in the development of the federal capital, and the several municipal corporations existing within the District of Columbia were too weak financially for the improvement of the territory which they occupied.[1] Under the territorial government (1871-1874) Congress contributed more freely than ever before towards the support and development of the federal district, but its appropriations were based upon no definite plan. When the territorial government was abolished in 1874, Congress took over the financial administration of the District of Columbia, assumed full responsibility for its debt and for all necessary current expenses which should not be met by local taxation.

A bill presented in 1876 for the permanent government of the District of Columbia contained the provision that forty per cent of its expenses should be defrayed by the general government. By the act of 1878, under which the District of Columbia is now governed, the ratio was placed at one-half, and since 1878 the United States Government has borne one-half of the expenses of the District, as approved by Congress in its annual appropriation acts. This rule is based upon the fact that about one-half of the value of real property in the District of Columbia belongs to the United States Government and is not taxed. The half-and-half rule has not, however, been observed in all cases. It has been customary for Congress to place upon the District of Columbia the whole burden of paying for street extensions, where the cost of such extensions is not borne by the property benefited. A law of 1906 regarding street extensions specifically provides that "if the total amount of the damages awarded by the jury and the costs and expenses of the proceeding be in excess of the total amount of the assessments for benefits, such excess shall be borne and paid by the District of Columbia."[2]

---

[1] The cities of Washington and Georgetown and the county of Washington. The town and county of Alexandria were retroceded to Virginia in 1846.

[2] 34 Statutes at Large, 151, 1128, 1157.

Apart from the contributions from the federal treasury, the receipts of the District of Columbia from taxes and other revenues, for the fiscal year ending June 30, 1907, were nearly six and one-half million dollars. This amount was made up principally of the following items:

Real property tax	$3,650,805.36
Personal property taxes	752,492.59
Licenses (business), including dog tax and insurance.	679,072.73
Industrial enterprises	569,566.34
Fees	73,150.31
Fines	107,838.46

By a curious system of bookkeeping required by law, special assessments are not treated primarily as revenue, and it is impossible to know the exact amount received from this source, but during the fiscal year ending June 30, 1907, special assessments were levied to the amount of $220,871.59.

Real property and tangible personalty are taxed in practically the same manner, and may be discussed together. Tangible personalty is required to be assessed at its fair cash value; real property at not less than two-thirds of its true value, which is interpreted to mean, at two-thirds of its true value. The rate for both real property and tangible personalty is one and one-half per cent on the assessed valuation. The terms "fair cash value" and "true value" are interpreted to mean market value under normal conditions. Before 1892 the assessors interpreted these terms to mean "what property would bring at forced sale under adverse circumstances."[3]

The following personal property is exempt from taxation: (1) personal property of all library, benevolent, charitable, and scientific institutions incorporated under the laws of the United States or of the District of Columbia, and not conducted for private gain; (2) Libraries, school books, wearing apparel, and all family portraits; (3) Household and other belongings, not held for sale, to the value of one thousand dollars, owned by the occupant of any dwelling house or other place of abode, in which such household and other belongings may be located.[4] It is difficult to say just what real property is exempt from taxation. Of course no property of the United States or of the District of Columbia is taxable. All churches, institutions of public charity, public library buildings, school houses not used for private gain, and cemeteries not conducted for a profit, are exempt from taxation upon all their property not used for business purposes or to secure an income. In addition, there are numerous organizations of a charitable, religious, or educational character exempted from taxation by special acts of Congress.[5] In 1903 the assessor estimated that 51.80 per cent of the value of real estate in the District of Columbia belonged to the United States, 0.95 per cent to the District of Columbia, and that 2.65 per cent was exempted from taxation under general or special laws regarding educational, religious, charitable, and other institutions, so that only 44.60 per cent of the real property was actually taxed.

---

[3] Fifty-second Congress, First Session, H. R. Reports 1469.

[4] 32 Statutes at Large, 620; 33 Statutes at Large, 564.

For the assessment of real property and of tangible personalty there are an assessor and five assistant assessors, all of whom are irremovable except for inefficiency, neglect of duty, or malfeasance in office.[6] Three of the assistant assessors are designated to form a board for the assessment of real property, and also an excise board for the issuance of liquor licenses and the enforcement of the laws regarding the sale of liquor. The assessor is ex-officio chairman of these boards. A new assessment of real property is made once every three years. Within the period between the triennial assessments, the assistant assessors add to the assessment roll other property which has become subject to taxation or which may have been missed at the time of the regular assessment.[7]

The three assistant assessors together, "from actual view and from the best sources of information within their reach," make their valuations of each separate tract of real property, and estimate separately the value of all improvements on each tract. For their guidance a daily transcript is made and entered on the records of the assessor, of property transferred by deeds and wills filed in the offices of the recorder of deeds and the register of wills.[8]

Two of the assistant assessors form a board of personal tax appraisers, of which the assessor is ex-officio chairman. Tangible personalty is required to be returned by its owners on detailed schedules of the usual form. The assessor annually gives notice by publication when the personal property schedules are ready for distribution and may be had at his office. Such schedules are to be made out and returned within thirty days after the published notice of their being ready for distribution. It has been the experience of the appraisers that little more than one-half of those liable to taxation on personal property make returns on the regular schedules.[9] Where returns are not made, the appraisers, "from the best information they can procure,"[10] make an assessment and add thereto a penalty of twenty per cent. The personal tax appraisers have authority to reject any returns and to reassess personal property from examination, or upon the basis of other definite information which they may be able to obtain.[11] By means of inspectors who personally examine houses and their furnishings and other personal property, the personal tax appraisers think that they succeed in assessing practically all taxable personalty, and that such property is assessed at approximately its true value.

---

[5] D. C. Compiled Statutes, 519-521 ; 32 Statutes at Large, 616.

[6] 32 Statutes at Large, 617, July 1, 1902.

[7] 28 Statutes at Large, 282, August 14, 1894.

[8] 30 Statutes at Large, 1376, March 3, 1899.

The assessor and the five members of the board of assistant assessors together constitute a board of equalization and review of real estate assessments, and a board of personal tax appeals; an appeal lies to them from every assessment made by the real estate assessors and the personal tax appraisers. The same persons thus sit in judgment on appeals from their own assessments.

All taxes on real and personal property are payable in the month of May of each year, but may be paid in two equal instalments, the first in November, and the second in May. If taxes are not paid by the first day of June, a penalty of one per cent per month is imposed.[12] Personal taxes remaining unpaid after this date are collected by distraint and sale of personal property, or in default thereof, by the sale of real property.[13] The payment of taxes on real property is enforced by the sale of the property upon which the taxes are delinquent.[14]

Before 1893 there was much criticism of real property assessments, which were triennially made by temporary employees. As a remedy the Commissioners of the District of Columbia proposed the creation of a board of permanent assessors, and this reform was definitely effected by the law of August 14, 1894.

---

[9] Report of Commissioners for 1905, I, 73.

[10] "This clause is interpreted to require definite information as a basis for assessment, obtained either by actual view or otherwise. Assessor's Report for 1907, p. 8.

[11] 32 Statutes at Large, 617, July 1, 1902, Report of Commissioners for 1903, p. 64

[12] 32 Statutes at Large, 33, February 11, 1902.

[13] 32 Statutes at Large, 621; 33 Statutes at Large, 564.

[14] 32 Statutes at Large, 632, July 1, 1902

However, the assessment of real property still remains to a large extent unsatisfactory. A congressional committee which examined the assessed values of real property in 1892 endorsed the statement that business property was assessed at about fourteen per cent of its true value, small houses at from seventy to eighty per cent of their value, while land held for speculative purposes was assessed at about ten per cent of its value. This was under the régime of temporary assessors employed for only a few months in each three-year period, and much fairer valuations have unquestionably been obtained by the permanent board of assessors. However, a comparison of assessment values with selling prices shows a great undervaluation of unimproved suburban property. For the property condemned by the United States Government for the Senate office building, juries awarded the owners from two to three times the assessed valuation. But this can hardly be considered fair evidence, for everyone knows that high awards are usual in condemnation proceedings. But other evidence is easily at hand, and a comparison of selling prices with valuations for taxation clearly shows that much real property is undervalued. For example, the forty-seven "flat buildings" or apartment houses in Northwest Washington are assessed at $725,800, while two or three of them alone are easily worth this amount.

Until 1901 the District of Columbia had the general property tax almost without modification, and the assessors made the attempt to reach both tangible and intangible personalty. In their report for the year 1881 the Commissioners called attention in strong terms to the failure of the tax system with reference to intangible personalty: "That the personal tax law now in force has not been successful as a revenue measure, experience has clearly demonstrated. Its tendency is to discourage business and honest returns of personal property for taxation; to enhance the local rates of interest on money; to encourage the investment of local or resident capital in non-taxable securities; and to give the control and profit of the local money market to non-resident capitalists." The assessor's report for 1882 called the whole system a failure and said that for that year hardly any intangible property had been returned for taxation.[15] A table of assessments at intervals of four years from 1877 to 1901, will show the failure of the general tax on personal property much more clearly than can be done in words:

1877	$15,429,873
1881	10,895,712
1885	12,795,934
1889	11,728,672
1893	12,045,290
1897	9,532,851
1901	12,567,084

The law for the assessment of personal property became practically a dead letter. Under the law of 1877 providing for the assessment of personal property, returns were to be made by property owners upon blanks furnished by the assessor. If the returns were not made within a specified time the assessor was required to make an assessment from the best information which he could procure, and to add thereto fifty per cent as a penalty. Under the direction of the commissioners, the assessor in 1901 attempted to enforce this law, but the matter was brought before the Supreme Court of the District of Columbia, which declared that the law of 1877 had been virtually repealed by subsequent congressional enactments.[16] With the failure of the law of 1877 further legislation regarding taxation immediately became necessary, and Congress, by the law of July 1, 1902, introduced the first radical departure from the system of the general property tax. This law, as amended on April 28, 1904, is now in force.[17]

What is now called a personal property tax in the District of Columbia is really a combination of several distinct taxes. The taxation of tangible personalty has already been mentioned. Dealers in general merchandise are required to pay a tax of one and one-half per cent upon their average stock in trade for the year preceding their tax returns.

A fairly well-defined system of corporate taxation was established by the laws of 1902 and 1904. National banks, incorporated banks, and trust companies are required to pay a tax of 6 per cent of their gross earnings; incorporated savings banks, 4 per cent of their gross earnings, less the interest paid to their depositors; building associations, 2 per cent of their gross earnings; street railways, 4 per cent; gas companies, 5 per cent; electric light and telephone companies, 4 per cent; fidelity, guaranty, and title companies, 1½ per cent of their gross earnings; insurance companies 1½ per cent of their premium receipts. These gross receipts and premium receipts are returned by the corporations upon the personal property assessment blanks in the same manner as is tangible personalty. In addition to these gross receipts taxes the law specifically provides that real estate owned by national and other incorporated banks, and by trust, gas, electric light, and telephone companies shall be taxed as is other real estate. Real estate of street railways is also subject to the regular real property tax. The most remunerative of the gross receipts taxes are those on public service corporations; in 1907 about eleven per cent of real and personal property receipts were derived from this source.[18]

---

[15] Report of Commissioners for 1882, p. 53.

[16] Report of the Commissioners for 1902, p. 52.

[17] 32 Statutes at Large, 617; 33 Statutes at Large, 563.

The capital stock of corporations organized in, or for the purpose of transacting business within the District of Columbia, other than those provided for above or exempted from taxation by law, is appraised in bulk at its fair cash value by the board of personal tax appraisers, and is subject to a tax of one and one-half per cent per annum upon such assessed valuation, but from the value of such capital stock is first deducted the assessed value of all real estate in the District of Columbia which is separately taxed against the corporation. The law further provides that none of its provisions regarding the taxation of capital stock of corporations shall be "construed to include business companies which, by reason of or in addition to incorporation receive no special franchise or privilege; but all such corporations shall be rated, assessed, and taxed as individuals conducting business in similar lines are rated, assessed, and taxed."[19] As is seen above the law for the general taxation of corporations is very ambiguous. It would seem to depend entirely upon the will of the personal tax appraisers whether corporations shall be taxed on their capital stock or in the same manner as individuals, for few but public service corporations (which are otherwise provided for) receive any special franchise or privilege by virtue of their incorporation.

---

[18] Report of the Commissioners for 1907, p. 22.

[19] 33 Statutes at Large, 564.

This brief description of taxation of corporations in the District of Columbia indicates its patchwork character. It is partly a tax on valuable franchises; partly a heavy and unequal tax on businesses which derive no special benefit from incorporation. For example, trust companies, incorporated savings banks, and building associations, engaged to a large extent in similar business operations, are taxed respectively six, four, and two per cent on their gross receipts. It should be said, however, that the Commissioners of the District have for several years recommended a readjustment and reduction of tax rates on banks and similar institutions, and an increase of rates upon the valuable franchises of public service corporations.[20]

An analysis of the revenue derived from the so-called personal tax is of interest. For the fiscal year 1906-07 the total personal tax levy[21] amounted to $805,688, of which the estimated revenue from gross receipts taxes was $495,181.94, leaving as the estimated yield from tangible personalty and from general corporate taxation $310,506.06. Deducting the gross receipts taxes, the revenue derived from tangible personalty and general corporate taxation represents an assessed valuation of about twenty million dollars. Of this assessed valuation perhaps the greater part represents store fixtures and business stock in trade. The generous exemption of household property to the value of $1,000 leaves the greater part of such personalty free from taxation, for Washington has not yet become pre-eminently the home of rich people.

The sources of local revenue, aside from real and personal property taxes, may be briefly considered. Receipts from licenses form the third most important item of District revenues, but the amount credited to this source is increased by about $81,000 through the plan of classing the tax on insurance premiums with license taxes. There is an elaborate system of business licenses covering practically everything from a slot machine to a private bank. Some of these license taxes are no more than small fees imposed for police purposes, and for most businesses they yield but a small amount of revenue. Much the most important single item is that of liquor licenses, which yield nearly seven-tenths of the total revenue from this source. The licensing of wholesale and retail liquor dealers and the regulation of the liquor traffic are placed under the control of an excise board, which is composed of the three members of the board of assistant assessors of real property. The revenue derived from fees is comparatively small, the most important items being judicial fees, fees for building permits, and payments for the services of the public surveyor. The receipts from fines imposed by the police court do not constitute a large amount.

---

[20] Report of the Commissioners for 1907, p. 22.

[21] Report of Assessor for 1907. The figures on page 138 of this article represent the total amount collected at the end of fiscal year; those here used are based upon the tax levy, not all of the taxes levied having been collected at the end of the year.

The important industrial enterprises of the District of Columbia are its water system, markets, and wharves. For the fiscal year ending June 30, 1907, the receipts of the water works amounted to $535,950.92, and the expenditures were $510,466.88. The system has uniformly been managed with the view of furnishing water at the lowest rate which would make the water works self-supporting. In 1902 the annual surpluses had formed a fund of several hundred thousand dollars which has since then been used for the improvement of the service. The revenues of the water works have been sufficient to provide for the maintenance and betterment of the service, but not sufficient to defray the cost of extensive permanent improvements, such as aqueducts and filtration plants; that is, they have been sufficient for maintenance but not for the extension of the service. The revenue derived from the rental of markets and wharves is comparatively small, but is more than sufficient for the maintenance of the property rented.

With regard to special assessments it is necessary to speak more at length. For the construction of sidewalks and the improvement of alleys one-half the cost is assessed upon abutting property, on the basis of linear frontage. The whole cost of service connections with water mains and sewers is assessed against the property benefited.[22] For the laying of water mains abutting property is assessed at one dollar and twenty-five cents per linear front foot, and for the laying of service sewers an assessment of one dollar per linear front foot is made.[23]

For the opening, widening, or extension of alleys, and the extension of streets and avenues, a judicial proceeding is provided for the condemnation of property and the assessment of benefits. The Commissioners institute proceedings before the Supreme Court of the District of Columbia. The court, after proper notice, appoints a jury of five disinterested freeholders. This jury assesses the value of property condemned, and the benefits accruing to property from the opening or extension of a street or alley. The court can set aside the award of this jury, either upon the complaint of property owners or upon its own motion, but when confirmed such awards become liens upon the property affected.[24]

---

[22] 28 Statutes at Large, 247, August 7, 1894.

[23] 33 Statutes at Large, 244, April 22, 1904.

In some of its earlier laws for street extensions Congress provided that the amount of benefits assessed should not be less than one-half the total damages awarded for the condemnation of land.[25] This provision was held unconstitutional by the Court of Appeals of the District of Columbia, as a departure from the rule that special assessments should be apportioned only with reference to the amount of special benefit, but the law was sustained, on appeal, by the Supreme Court of the United States.[26] Other laws attempted to impose at least one-half the cost of street extensions upon the property owners benefited by providing that the Commissioners of the District of Columbia might reject the findings of juries if the aggregate amount of benefits assessed were less than one-half the amount of damages awarded,[27] but this provision was ineffective. The present law simply provides that the excess of damages over benefits shall be borne by the District of Columbia. As a result the local government pays much the greater part of the cost of street extensions. No property except that of the United States or of the District of Columbia, and property owned by foreign governments for legation purposes, is exempt from assessments for improvements.[28]

In concluding the discussion of the revenues of the District of Columbia it may be said that the several taxes have been imposed almost without reference to each other, and that no effort has yet been made to develop a uniform system of taxation. The District of Columbia is in an excellent position to develop a model system of local revenue. Municipal corporations in the states labor under the difficulties arising from the confusion of state and local taxes, but here there is only one taxing body,[29] and the financial situation has no complications except those arising from the close relationship existing between the United States and the District of Columbia.

---

[24] District of Columbia Code, Sec. 1608-1608*l*; 31 Statutes at Large, 151.

[25] 30 Statutes at Large, 1311.

[26] Davidson *v.* Wight, 16 App. D. C., 371; Wight *v.* Davidson, 181, U. S. 371.

[27] 31 Statutes at Large, 665, June 6, 1900.

[28] 32 Statutes at Large, 596, 961.

The Budget and Budgetary Procedure

The fiscal year of the District of Columbia begins on the first day of July. Preliminary estimates of expenditures are made by the several offices of the District government almost one year before the beginning of the fiscal year for which appropriations are to be made. These estimates are sent to the executive office of the District of Cloumbia, and are revised by the Commissioners, who frequently make substantial reductions in them. However, the estimates of certain departments of the local government are not subject to change by the Commissioners. The school law requires that the board of education annually on the first day of October transmit its estimates to the Commissioners, who must submit the estimates with such recommendations as they deem proper.[30] The Commissioners have, under protest from the board of education, placed their own revised estimates for schools in the regular book of estimates, and submitted separately the estimates of the board of education.[31] The Commissioners are required by law to transmit the estimates of the board of charities without change.[32] Among other items which appear in the District of Columbia estimates and appropriations, but which are not subject to revision by the Commissioners, are those for the filtration plant, aqueduct, militia, and sinking fund. Besides items in the District of Columbia estimates not subject to revision by the Commissioners, there are items in other appropriation bills which relate to the District, and one-half of the expense of which is borne by the District of Columbia; such, for example, are the expenses for parks, and for the Supreme Court and Court of Appeals of the District of Columbia, appropriations for which are made among the legislative, executive and judicial appropriations of the United States. From this statement it clearly appears that there is no one central authority in the District which has power to prepare estimates.

---

[29] It is true that in the District of Columbia the federal customs and internal revenue taxes are in force, but these taxes do not affect the sources of local revenue.

[30] 34 Statutes at Large, 316.

[31] House Hearings on District of Columbia appropriation bill for 1908, p. 119.

[32] 31 Statutes at Large, 664.

The Commissioners submit their estimates to the Secretary of the Treasury during the month of October of each year, together with a statement of estimated revenue from local sources, exclusive of the water department.[33] The statement of estimated revenues is made up in September of each year by a committee consisting of the auditor, the assessor, and the collector of taxes. By law it is made the duty of the Secretary of the Treasury to approve, disapprove, or suggest changes in the District estimates, as he may think the public interest demands;[34] but the Secretary of the Treasury can know little or nothing as to the specific needs of the District of Columbia, and simply transmits the estimates of the Commissioners to Congress, without suggestions, or with a recommendation that the total estimates be reduced to an equality with the total estimated revenues.

With respect to the form of estimates and appropriations it should be said that they are as a rule detailed and specific, and that there are few lump sum appropriations. The classification now used is susceptible of improvement, but is made obligatory by a provision of law, enacted in 1902, which requires that hereafter "the estimates for expenses of the District of Columbia shall be prepared and submitted each year according to the order and arrangement of the appropriation Act for the year preceding, and any changes in such order and arrangement and transfers of salaries from one office or department to another desired by the Commissioners may be submitted by note in the estimates."[35]

The congressional machinery for the consideration of the District of Columbia appropriation bill is not the most satisfactory. The House and Senate committees on the District of Columbia handle all general legislation relating to the District, including measures which relate to taxation. The appropriation bill, however, is considered by the House and Senate committees on appropriations.

---

[33] Estimates for the water department appear in the estimates of the District of Columbia, but appropriations for this service are payable wholly from the revenues of the water department.

[34] Compiled Statutes of the District of Columbia, 204.

[35] 32 Statutes at Large, 616, Sec. 4, July 1, 1902. The financial accounts must necessarily follow the same classification as that used in the appropriation acts, and until Congress permits the adoption of a different classification of appropriations it will be impossible for the District of Columbia to prepare its accounts in accordance with the approved plans for uniform municipal accounting.

For several years it has been the practice in the Senate that the chairman of the committee on the District of Columbia should be a member of the committee on appropriations and chairman of the District of Columbia sub-committee of the latter committee; but in the House there is no such informal relationship between the committee on appropriations and the committee on the District of Columbia. Both House and Senate committees on appropriations, by means of sub-committees, hold hearings on the District of Columbia appropriation bill; the commissioners, other officials, organizations, and individuals appear at these hearings to explain estimates and urge appropriations. These hearings are as a rule necessarily brief, but now and then they are very exhaustive.[36] As appropriation bills must originate in the House, the House hearings are always held first, and the Senate hearings are on the appropriation bill as passed by the House. As a rule the Senate materially increases appropriations approved by the House; and the House then concurs in most of the Senate amendments.

In the congressional hearing and consideration of District appropriations there is little consideration of the equilibrium of revenues and expenditures. The revenue item is presented, it is true, but appropriations are urged, and there is little consideration given to the development of a well-balanced system of local finance. The appropriation committees of the House and Senate probably know more about the affairs of the District of Columbia than any other committees of Congress, but these committees do not and cannot give to the District finances the careful consideration which they deserve.

It would seem that this careful consideration should be given to the estimates before they reach Congress. This might be accomplished by the establishment of a board similar in character to the board of estimate and apportionment of New York City, which should receive estimates for all services of the District, and subject them to careful investigation and consideration, giving the taxpayers and other interested persons an opportunity to be heard. Carefully-prepared and well-considered estimates, presented by such a body, would have much greater weight with Congress than estimates prepared under the present system.[37]

---

[36] As, *e. g.*, the House hearing of 1906.

[37] It has been suggested that an improvement might be made in the congressional machinery for considering the affairs of the District of Columbia by con-

As has been said, appropriations are as a rule detailed and specific, and there is little elasticity in the budget of the District of Columbia. However, for a number of years Congress has annually provided an "emergency fund" of eight thousand dollars, "to be expended only in case of emergency, such as riot, pestilence, public insanitary conditions, calamity by flood or fire, and of like character, and in all cases of emergency not otherwise sufficiently provided for."[38] The specific appropriations cannot be exceeded, and the budgetary inelasticity makes necessary the annual appropriation of further amounts to cover deficiencies of appropriations. For the fiscal year 1905-06 there were, besides the regular appropriation act of March 3, 1905,[39] additional appropriations for the District of Columbia in the urgent deficiencies act of February 27, 1906, in the additional urgent deficiencies act of April 16, 1906, and in the deficiencies appropriation act of June 30, 1906.[40]

The United States Treasury is the fiscal agent of the District of Columbia. The local revenues are paid into the federal treasury to the credit of the United States, and no funds in the treasury are credited to the District government. Appropriations are made payable one-half from the revenues of the District of Columbia, but there is no segregation of funds, although an account is kept of revenue derived from local sources. Money is paid from the treasury to the disbursing officer of the District of Columbia, upon the requisition of the Commissioners, each requisition specifying the appropriation upon which it is drawn. No appropriation can be exceeded either in requisition or expenditure.[41] All balances of appropriations not expended within two years after the close of the fiscal year for which they were made, are covered back into the treasury of the United States, one-half to the credit of the United States and one-half to the credit of the District of Columbia.[42]

Unless otherwise specified by law all accounts for the disburse-

---

centrating all such matters in the hands of a joint committee of the House and Senate. Theoretically this would be better than the present arrangement, but few senators and representatives could be persuaded to assume the heavy duties which membership of such a committee would involve. Members of Congress must look after the interests of their constituents, and naturally prefer to be on committees in which their work will bear a close relation to the interests of their states.

[38] 34 Statutes at Large, 1147, March 2, 1907.

[39] 33 Statutes at Large, 883.

[40] 34 Statutes at Large, 31, 119, 640.

[41] 22 Statutes at Large, 170; 30 Statutes at Large, 526.

[42] 25 Statutes at Large, 808.

ment of appropriations for the District of Columbia are audited by the auditor of the District of Columbia before being transmitted to the accounting officers of the federal treasury.[43] However, there are so many exceptions to this rule that the accounts of the auditor of the District of Columbia do not show the total expenses of the district, and cannot do so until all district appropriations are made payable through the disbursing officer of the District and subject to local audit.[44] Accounts of the District of Columbia, after being approved by the auditor of the District, are also passed upon by one of the auditors of the Treasury Department before being paid.

From the safeguards with reference to its financial affairs, it is clear that the District of Columbia has little opportunity to accumulate a floating debt. Practically the only floating debt which the District ever has is that arising from judgments of courts and from other small liabilities which could not be anticipated and included in the appropriations for the year, such indebtedness remaining unpaid until provision is made for it by Congress in the appropriation act for the succeeding year. The Commissioners cannot affirmatively incur liabilities in excess of appropriations actually made.

Extraordinary Expenses and Unfunded Debt

From 1880 to 1900 the finances of the District of Columbia were in a prosperous condition, and there were frequent annual surpluses. Since 1900 a number of great improvements have been undertaken at a total estimated cost of $16,734,425.[45] It has been impossible for the District revenues to bear currently the burden of these enterprises, and in 1901 Congress authorized the Secretary of the Treasury to advance, on the requisition of the Commissioners of the District of Columbia, such amounts as might be necessary to meet local expenses authorized by Congress, such advances to be reimbursed to the federal treasury out of the revenues of the District of Columbia within five years, with interest at the rate of two per cent per annum. While the extraordinary expenses have been continuing, new advances have been necessary, and reimbursement could not be made to the federal treasury. Congress has, for this reason, each year repeated the authorization for advances, the law of 1907 requiring that reimbursement begin on July 1, 1908.[46] The extraordinary expenses are still continuing and it will be necessary to repeat the authorization for advances for the fiscal year 1908-09, and probably for several years longer. In this way the District of Columbia has accumulated an unfunded debt, and on June 30, 1907, owed $3,227,866.28 to the United States.

---

[43] 30 Statutes at Large, 526; June 30, 1898.

[44] Report of Auditor of the District of Columbia for 1907, p. 4.

[45] Report of Commissioners for 1907, p. 6.

The Commissioners of the District have repeatedly criticised this plan of advances from year to year from the federal treasury, and have recommended the adoption of a comprehensive and permanent plan for the financing of extraordinary enterprises. The recommendation of the Commissioners involves a distinction between extraordinary and current expenses. According to their plan current expenses are to be defrayed entirely from current revenues; for extraordinary expenditures which have been or may be defrayed in part by means of advances from the federal treasury, repayment with interest should be made from the revenues of the District of Columbia within fifteen years, by means of annual payments.[47] This plan is better than the temporary expedient of annual advances, but involves a wider departure from the sound rule of "pay as you go." The placing of too many items on the side of extraordinary expenses is apt to cause those in charge of a revenue system to lose sight of the necessity of balancing revenues and expenditures.

Funded Debt

When the territorial government of the District of Columbia was organized in 1871 it inherited a debt of more than four million dollars from the corporations which it superseded. An additional debt of four million dollars was almost immediately contracted by the new government through the issuance of bonds for the construction of public improvements. Between 1871 and 1874 there was added to this debt of over eight million dollars a large floating debt contracted without legal authority and to a large extent in direct violation of legal limitations. When the territorial form of government was abolished in 1874 the first and second comptrollers of the United States

---

[46] 34 Statutes at Large, 1157, March 2, 1907.

[47] House hearings on District of Columbia appropriation bill for 1908, p. 17.

Treasury were appointed a board of audit to examine and audit for settlement all the unfunded or floating debt of the District of Columbia. All claims approved by this board were funded into fifty-year bonds guaranteed by the United States and paying 3.65 per cent interest. The board of audit sat for nearly two years and audited accounts amounting to more than thirteen million dollars. In 1880 the jurisdiction of the Court of Claims was extended to claims still outstanding against the District of Columbia, judgments of the court to be paid in the above-mentioned fifty-year bonds.[48] The total issue of such bonds for claims audited by the board of audit and for claims adjudged good by the Court of Claims was limited to fifteen million dollars, and all but twenty-seven hundred dollars of this amount was issued. In 1878 the funded debt of the District of Columbia amounted to $22,106,650.

When the District finances were put into shape it was found possible to pay interest on the funded debt, and annually to apply some money towards its reduction. The policy was pursued of retiring the shorter term bonds. In 1891, when the twenty-year bonds of 1871 fell due, Congress provided for their redemption by means of ten-year three and one-half per cent bonds redeemable after two years.[49] These short-term bonds have been retired, and the debt of the District of Columbia, $10,607,750 on December 31, 1907, is entirely in the 3.65 per cent fifty-year bonds which reach maturity in 1924.

By act of June 11, 1878, the Treasurer of the United States is ex-officio commissioner of the sinking fund of the District of Columbia, and has charge of all financial operations relating to the funded debt. By an act of March 3, 1879, Congress provided that there should annually be appropriated a sum sufficient to pay the principal of the 3.65 per cent bonds, at maturity, this sum to be annually invested in such bonds at not exceeding their par value, the purchased bonds to be canceled and destroyed. The amount necessary for the payment of interest on the debt and for the sinking fund was estimated at $1,213,947.97, and this amount was annually appropriated from 1882 to 1903. A new calculation convinced the treasury authorities that an annual appropriation of $975,408 would be sufficient to pay interest and sink the outstanding bonds at maturity, and the smaller amount has been appropriated since 1903. In 1903 also the Treasurer of the United States was empowered to invest the sinking fund in United States bonds when the District bonds could not be purchased at an advantageous price.[50]

---

[48] 21 Statutes at Large, 284, June 16, 1880.

[49] 26 Statutes at Large, 1103.

The Treasurer of the United States in his report for 1892 has given a good description of the operation of the sinking fund: "All bonds purchased for the sinking fund in accordance with the provisions of the act creating a sinking fund for the 3.65 per cent loan cease to bear interest and are canceled and destroyed in the same manner that United States bonds are canceled and destroyed, but the appropriation being the same amount annually, the sum available for the sinking fund increases from year to year as the interest charge diminishes and is in effect the same as if the bonds purchased were held and the interest collected and applied to the sinking fund."[51]

[50] 32 Statutes at Large, 975.

[51] Fifteenth annual report of the Treasurer of the United States on the sinking fund and funded debt of the District of Columbia, p. 10.

THE RELATION OF CHICAGO TO PUBLIC SERVICE CORPORATIONS

By George C. Sikes,
Secretary, Municipal Voters' League, Chicago.

The keynote of Chicago's public utility policy is home rule. New York and Massachusetts are tending more and more toward state domination in such matters. Chicago, on the one hand, and New York and Massachusetts on the other, represent opposite tendencies. Wisconsin is steering a middle course between the two. Recent public utility laws of the Badger State provide for a combination of state regulation and local control. In theory the Wisconsin method would seem to be the wisest of the three, but public sentiment in Chicago insists upon the largest measure of home rule, and under the conditions there existing this policy appears to be the safest. Wisconsin has no great cities. Milwaukee, the largest, has a population of only about 300,000. In New York State there are other cities of considerable size besides the metropolis, notably Buffalo, with about 400,000 inhabitants. More important than all other considerations, perhaps, in explanation of the difference of policies, is the fact that New York City and Boston have been less vigorous than Chicago in their determination to oppose state interference in matters of municipal concern. Boston, being the capital of Massachusetts, is able, however, to protect its public rights before the legislature, under a system of state domination, in a better manner than can a community like Chicago, which is not the seat of government. Chicago, with a population of more than 2,000,000, is located in a state which has no other city approaching even 100,000 in population. Chicago and the rest of Illinois do not understand each other as well as they should. The people of Illinois, although they respond readily to such requests for help as can be brought home to them, have a vague general mistrust and fear of the city by the lake. The people of Chicago, on the other hand, have a corresponding fear that the people of the state at large will not comprehend their great city problems, and in case of state control would leave them at the mercy of officials amenable to influence by special interests. Corporate influences from time to time have suggested state regulation of local public utilities, but the proposition has always met with such popular protest as to doom it to defeat. In fact, Illinois has even failed to provide effective state regulation over matters that properly call for that control, such as the interurban phases of the street railroad business.

In the exercise of the home rule powers which Chicago insists upon, that city appears to be groping toward a public utility policy with rather clearly defined features. Speaking broadly, those features are: (1) short term franchise grants, with reservation to the city of the right of municipal purchase at any time or at stated intervals during the life of the grant; (2) full publicity in the affairs of public utility corporations; (3) regulation of rates and service by the city council; (4) the disposition to promote unification and to recognize the natural monopoly nature of public utility enterprises.

Of local public utilities in Chicago, the street railways have occupied most attention in the public mind. The first street railway franchise grants were made by the city council for twenty-five year periods. The companies in 1865 secured legislation from the state which they confidently believed had changed these twenty-five year grants into ninety-nine year grants. So great was the public outcry at this outrage that the constitutional convention of 1870 sought to make its repetition forever impossible by providing that no future street railway grants could be made without the consent of the proper local authorities. In 1897 Mr. Yerkes, then the dominant figure in Chicago traction matters, came forward with a proposition for a state commission to exercise control over all street railways. Mr. Yerkes' program became a burning political issue and was repudiated. While the state commission plan was defeated, Mr. Yerkes did secure from the legislature of 1897 a law authorizing the city to make fifty year franchise grants, where the statutory limit before had been twenty. But the public outcry against this measure forced its repeal by the succeeding legislature without any grants having been conferred under it in the City of Chicago.

The street railway commission, created by resolution of the city council, submitted a report in December, 1900, outlining a street railway policy for the City of Chicago which has been adhered to by the city more closely than even its framers anticipated would be the case. That commission recommended securing from the general assembly legislation authorizing the city to own and operate street railways as a prerequisite to any settlement of the street railway franchise question by the city council. It was not the idea of this commission that the city should actually municipalize the lines at once. The Chicago idea is that the city should have full power from the legislature to deal with the general subject in such manner as may seem to it wise. It should be in a position either to municipalize or to secure service through a franchise arrangement with a private corporation. It was another important recommendation of this commission that a modified form of the indefinite term franchise grant in use in Massachusetts be adopted in Chicago. The commission also urged unification, through routes and universal transfers. Due emphasis was laid upon the need for publicity.

In substance these recommendations have all been carried out. The legislature passed an act, known as the Mueller municipal ownership law, giving Chicago the legal power to own and operate street railways. That the legislature did not also confer upon the city at the same time the financial power actually to acquire street railways was due wholly to constitutional limitations which the legislature could not overcome.

The street railway franchise settlement ordinances approved by the people of Chicago on a referendum vote last April, give to the principal street railway companies twenty year renewals of their franchise grants. These grants are subject to termination at any time on specified notice for the following purposes: (1) for city purchase for municipal operation; (2) for purchase by another corporation designated by the city, but if such corporation is organized for profit it must pay for the property twenty per cent more than the city would be obliged to pay; or (3) the grant may be terminated by purchase by a corporation designated by the city which shall agree to forego all profits in excess of five per cent on the investment, and in this case the purchase price shall be the same as the city would be required to pay if it were the purchaser. The purchase price for the city is to be the agreed price of the property at the time the ordinances were passed, which agreed price was inserted in specific figures in the ordinances, plus all new money thereafter expended by the companies under the supervision of the city. There are provisions designed to take care of depreciation. The ordinances require unified operation, with interchange of transfers between companies. Full publicity of accounts is required.

Under these ordinances, the companies, while they operate, are to receive five per cent, not upon their stock, but upon their recognized investment, and all earnings in excess of the five per cent are to be divided between the city and the companies in the ratio of fifty-five per cent to the city and forty-five per cent to the companies. It is expected that the portion of the city under the first year's operation will amount to nearly $1,500,000. If the intent of the ordinances is carried out these revenues will not be utilized for ordinary municipal purposes, but will be allowed to accumulate towards a purchase fund for the municipal acquisition of the street railways at some future time.

The elevated railroads of Chicago operate under fifty year grants which were made by the city council a dozen or more years ago. There are four elevated railroad systems, in addition to the union elevated loop, which is used jointly by all. At the present time the elevated railroad question is acute through the inability of the companies to handle their traffic properly, and the public is taking advantage of the situation to demand unified operation, through routes and interchange of transfers among the different elevated systems. The public has not yet seriously begun to demand unification and correlation of service as between the elevated roads and the surface roads, but in the order of logical development that is the next step.

The gas company operates under a perpetual franchise secured many years ago. Fifteen or twenty years ago there was an era of competition in gas manufacture. The council gave franchises, usually for fifty-year periods, to competing companies. The effort to maintain competition was abortive. In 1897 the gas and electric lighting interests secured from the legislature a law requiring the consent of abutting property owners as a prerequisite to the granting of a franchise for lighting purposes. The practical effect of this law was to prevent further grants to competing gas companies. By this time the people had become tired of seeking relief through competition. As a result of much agitation, the legislature was forced in 1905 to pass a law authorizing the city council to regulate gas rates. Under the authority thus conferred the price of gas was reduced by the council from one dollar to eighty-five cents per thousand feet. The reduction was agreed to by the companies without litigation, on consideration that the city on its part would recognize the consolidation of companies and cease its harassing litigation. The price of eighty-five cents was fixed for a period of five years, after which period the council will be in a position to exercise its regulating authority again.

The electric light business has been carried on by the Chicago Edison Company under a twenty-five year franchise, which will expire in 1912. In 1897, when "gang" influences dominated the city council, a fifty year franchise was given to the Commonwealth Company, supposed to be controlled by a group of speculating politicians. Later men powerful in the Edison Company purchased the Commonwealth franchise, and have sought to consolidate the two companies. The company, while claiming the consolidation is completely effected and legal, still seems desirous of securing council's approval for the merger.

The same legislature that authorized the Chicago city council to regulate the price of gas also authorized the reasonable regulation of electric light rates. The council has been wrestling for some time with the question of regulation of such rates. At this writing (March 15), the question is under consideration. The company is willing to agree to make certain rates, and to pay the city three per cent of the gross receipts on its entire business, if the city will recognize the consolidation. Among other things, there is a strong popular demand that the company, as a condition of this ordinance, agree to publicity of its affairs. There are a number of companies doing a small electric lighting business within limited areas, but none except the Commonwealth Edison Company covers the entire city.

The City of Chicago has a municipal electric lighting plant, but it can use the plant only for purposes of public lighting. It cannot sell to private consumers. A strong demand has been made that the legislature authorize the city to engage in the commercial lighting business. The best that could be secured was a provision in the act authorizing rate regulation purporting to confer upon the city the power to sell surplus electricity from its public plant, but it is said to be doubtful if this clause in the law will prove of much practical value.

The bills authorizing the Chicago city council to regulate the price of gas and electricity were bitterly opposed in the legislature by the gas and electric lighting interests. The suggestion that the state create commissions to exercise this regulating authority, instead of vesting it in the city council, was put forth by these interests in vain.

The telephone question has been much under discussion during the past two years. The twenty year grant to the Chicago Telephone Company in 1889 expires next year. Recently the city council has passed an ordinance renewing the grant for another twenty year period, but providing for possible municipal purchase at the end of ten years and at the end of fifteen years, as well as at the date of termination of the grant. This ordinance also calls for publicity in the affairs of the company. It further provides that the rates shall be subject to regulation by the city council thirty months after the passage of the ordinance and at the end of every five year period thereafter.

The water plant in Chicago has been the property of the city for more than half a century.

Less important franchises, such as those for switch track and other like privileges, are commonly made for short terms only and of late years it has been customary to make all such grants subject to termination at any time. The following section is the one that is usually incorporated in such grants:

"The permission and authority herein given shall cease and determine ten (10) years from and after the date of the passage of this ordinance, or at any time prior thereto in the discretion of the mayor. This ordinance shall at any time before the expiration thereof be subject to modification, amendment or repeal, and in case of repeal all privileges hereby granted shall thereupon cease and determine."

The municipal ownership sentiment has been strong in Chicago, and three years ago Judge Edward F. Dunne was elected mayor on the issue of immediate municipalization of street railways. As a reactionary consequence of Mayor Dunne's weak administration, the cause of "immediate" municipal ownership received a serious setback. But it is my opinion that sentiment in Chicago for municipal ownership of public utilities, when it can actually be brought about on proper terms, is as strong as ever.

RESULT OF FURTHER LEGISLATIVE REGULATION OF ELECTRIC RAILWAYS

By John Blair Mac Afee,
Philadelphia, President Central Kentucky Traction Company.

What will be the result of further legislative regulation of electric railways? The interurban and intramural electric railway have become identified one with the other, are operated in close harmony, and in most states are treated as the same class of transportation enterprise. Legislative action, taken within the past few years, has had a tendency to restrict the investment of capital in new enterprises of this class. The man of money who embarks in a new electric railway enterprise must, under ordinary circumstances, be one of great courage. Under present conditions, due to adverse legislation in many states, he should be called a hero. The promotion of additional electric railways has been rendered extremely difficult because of the fact that the promoter must needs show the prospective investor a possible profit greater than the established income rate on "safe" securities. It matters not what tempting profit the promoter may offer, the prospective investor has before his mind stories of receiverships and business embarrassments attendant upon many electric railway enterprises. The capitalist, thoughtful of his own interests, therefore hesitates, and as a result the enterprise fails to mature.

The history of street and electric railways in this country proves, beyond a doubt, that the primary investor has received little if any interest upon his investment for periods of years after construction and the beginning of operation. It apparently requires three classes or types of men to put an electric railway into successful operation and keep it there. First, the promoter; second, the quasi-investor; third, the real investor.

The promoter, with flattering facts and figures, induces the quasi-investor to furnish the money with which the road is constructed and put in operation. For this service the quasi-investor gets the bonds of the road at less than par and with stock bonus, the percentage of which bonus is regulated in proportion to the discount on his bonds. The first effort of this individual is to unload his securities upon the investor, of course at a profit. He may have to wait until the road has demonstrated its ability to earn its fixed charges, taxes and operating expenses. In accordance with these returns he puts a price upon his bonds. If the road is a great success, the price is high and the bonds are sold with little or no stock bonus, the quasi-investor retaining the stock. Should, however, the returns be small, he may have to sell the bonds below par and throw in the greater portion of the stock that he received as bonus, in order to be relieved of the burden of carrying the securities. The real investor is the man who carries the bag, as a rule. Convinced of the possibilities of the line, perhaps due to a patriotic feeling, confident of the growth of his city and country, he is willing to buy the stock at a low price and wait for returns. As I have before stated, however, these waits are invariably long.

Street railways have been built rapidly in the last fifteen years, largely because of the profits made by the old horse-car lines, which profits came to them in bulk at the time of the transition from horse to electric power. In promoting a new line, the astute individual handling the "proposition" makes no reference to the fact that these old-established horse-car lines were on the best streets of the city—in the ordinary avenues of travel. The inventor, inexperienced in the operation of such utility companies, is not heedful of this fact. The new lines of travel have to be built and the goodwill established.

The mileage of electric railway has increased in this country from approximately 2,000 miles in 1894 to about 40,000 miles in 1907. Transportation, both intramural and interurban, has been made easy. Some people have made money. As a result, legislatures are invoked to restrict the franchises. Some states in which the franchise was unlimited or perpetual have passed acts limiting the life of the franchise to twenty, twenty-five and thirty years. In other states enactments have been made requiring the electric railway to light the streets of cities traversed by their tracks, free of cost to the municipality. Restrictive speed regulations have been adopted. In one growing, thriving community all cars are required to reduce speed to three and a half miles an hour in crossing streets. If this were strictly adhered to the time occupied in transit would be so long that an average walker could almost keep pace with the car.

I think the average electric railway promoter does not complain particularly of the restriction of the life of the franchise. The investor, however, does. Money seeks permanent investment, and to say that a bond, for instance, is "well-held" is to imply that it is in the box of an estate, there to lie undisturbed for many years, except at coupon time. Trustees, guardians and other fiduciaries do not care, first, to have the trouble of reinvestment, and, second, are fearful of gradually reduced rates and interest. In shortening the life of the franchise the most potent thing that has been done is to compel the promoters or quasi-investors to sell the bonds at a less price than they would if the bond had a longer life. The life of the bond is usually limited within the range of the franchise. In this way the bonded debt is made greater than it should be, for the reason that the promoters or originators are determined, as far as they are concerned, to make as much money on the short term franchise as on the perpetual franchise. Increasing the bonded debt makes the burden of the railway greater and is in the main provocative of financial embarrassment.

Legislative restriction is therefore directly responsible for the curbing of enterprise. For instance, the number of new lines of electric railway projected in the past year was less than the number projected in the preceding year, and thus far this year, owing perhaps to general depressed financial conditions, the tendency to restrict investments of the sort has continued to increase. Restriction has frightened capital, confidence has been lost in the ability of the railway to earn its fixed charges, because of the unusual burdens, hence new capital cannot be secured. Failure to enlist new capital prevents extensions and building of new lines.

No other force has been so potent in building up the suburbs of cities, both great and small, as the transportation afforded by electric lines. Congested districts in large cities have to a great extent been turned over to business purposes, and the small, neat cottage in the suburbs has taken the place of the unsanitary tenement. Health conditions have improved, to say nothing of moral conditions.

If the restriction of enterprise favoring extensionh continues, it follows, as the night the day, that the growth of cities will be restricted and the prosperity of the country threatened. We do not mean to have it inferred that electric railways should have unlimited franchises, or that the operation of roads without proper legislative regulation should be allowed. But electric railway operators, the men whose time and money are given to this business, feel that such regulation should be the result of conference and study and that large capital interests invested in electric railway enterprises should not be threatened by populistic, socialistic or anarchistic movements, resulting in confiscatory enactment.

The operation of electric railways to-day is a scientific pursuit. Talented young men of the country are coming to the front in the development and operation of the enterprises. Their sole purpose is to increase efficiency and decrease operating cost. In decreasing operating cost, they are not aiming at the wage earner; they feel that he, be he honest, is worthy of his hire. Their thought and attention is directed to a higher grade of construction, thus reducing maintenance charges; to higher electric and machine efficiency, reducing coal and water cost. The great, new power houses of the day need comparatively few men as compared with the old-fashioned power houses, where coal was hand-stoked, engines were hand-oiled, switches were thrown by hand. In the modern plant machine stokers, lubricating devices of great ingenuity and motor switches have been adopted. Cars are being made larger, with more motive power added, are kept cleaner and in better state of repair. These young scientists who are devoting their lives to these enterprises will be checked in their ambitious efforts by further legislative regulation. A field of endeavor and usefulness will be curtailed in its area.

The electric railway has not only built up the cities, but it has made suburban life more attractive. All the facilities and the comforts of city life, the educational and amusement opportunities heretofore only possessed by the dweller within the brick walls are now at the beck and call of many a remote dweller on the farm. Whether or not more dwellers in the outlying country districts shall have these opportunities meted out to them will be largely dependent upon whether or not there be further legislative regulation.

The fixing of rates of fare by corporation commissions and other bodies is attended with great risk to the commonwealth. Invariably the men composing these commissions are men of high character and much ability in their chosen profession—usually the law. As a rule, however, they are absolutely devoid of experience in transportation as a business. Yet they presume to tell the operator, not only of the steam roads, but in some states of electric railways, what fares and rates they should charge.

The electric railway manager of to-day does not ask, "How much profit will there be in this form of operation?" He asks, primarily, "Can we do this without a loss?" His first thought is the protection of the interests of his company, but with this thought is allied so closely as to be almost inseparable, "How can I improve this company in the good will of the public?" If he can be sure that certain changes of operating detail can be made without attendant direct loss to his company, he will invariably adopt the change, feeling sure that it will ultimately prove profitable. Fares are reduced and changed or modified, ticket systems adopted, always with the thought of ultimate profit to the company, but that thought is based upon the knowledge that without the public good will there can be no profit.

As an illustration of some attempts at legislative regulation, let us cite an act introduced into the assembly of one of the Southern states, requiring electric railways operating lines more than twenty miles long to maintain tanks of fresh drinking water and toilet rooms, in and upon all of their passenger cars. Due to laws already upon the statute books of this state for separation of races, the enactment of this measure would have meant the installation of four toilet rooms and two drinking fountains in each "trolley" car. As a result of strenuous opposition it failed of passage. Again an act was introduced into the legislature of another state providing that cuspidors should be placed between each cross seat in each interurban electric car. Upon the representative of the railway interests suggesting to the committee of the legislature having the bill in charge that it was considered a misdemeanor to expectorate in public in many of the states, one of the legislators arose and said he "wanted to take advantage of the opportunity to advise the gentlemen that seventy per cent of the best gentlemen in his state chewed tobacco." Imagine the condition of ladies' summer gowns with a cuspidor in each seat with seventy per cent of the men chewing tobacco.

In conclusion, we believe that further legislative regulation, unless begotten of the wisdom that comes with knowledge of the business and as a result of conference with those who follow electric railway management as a profession, will have as its result the curbing and checking for at least a term of years of an industry, an enterprise, a developing force that has done as much if not more than any other one agency toward the advancement of the interests of all of the people of this great country.

COMMUNICATIONS

MODERATION IN CONTROL OF PUBLIC SERVICE CORPORATIONS

By Gen. Wm. A. Bancroft,
President Boston Elevated Railway Company, Boston, Mass.

That the public should be assured of getting the best attainable facilities at the lowest fare charge for which they can be given, every intelligent street railway man agrees. That no quasi-public service of any character can be rendered for a price less than one which will provide an income sufficient to pay operating expenses and give an adequate return on the capital investment, every fair-minded citizen admits. Yet during recent years under local "control" of public service corporations, in the name of "the greatest good to the greatest number," of the sixty-two operating street railway companies reported upon by the railroad commissioners of Massachusetts for the year ending September 30, 1907, twenty showed a deficit that makes them out practically bankrupt; twenty others showed a profit so small that they could pay no dividends; six paid dividends of less than four per cent; and only sixteen paid dividends of four per cent or more. Altogether these sixty-two companies operated 2,855 miles of single track; their gross income from operation was $30,552,400; and their total investment, including premiums on stock and other obligations, was $160,104,000. In other words, for each dollar of income their investment was $5.24.

It cannot be charged that this unsatisfactory showing is due to inflated securities, for no state has more drastic "stock watering" laws than Massachusetts. No reputable management objects to proper safeguards against stock watering; but "protecting investors" has passed all necessary bounds in a state where a company cannot offer new issues of securities to its old stockholders at par, but only at a price determined as their "current market value" by the railroad commissioners, whose ability and fairness are unquestioned. Such a proposition requires no discussion; its effect is obvious; its restrictive effect is wholly in the direction of depriving the public of what it wants or needs by making it impossible, in some instances, to finance improvements and extensions. It is one of the restrictive measures that make the operation of local transportation systems in Massachusetts, outside of the largest centers of population, an almost perilous undertaking at the present time.

In the face of such conditions new measures are put forward every year for further reducing the income or increasing the expenses of street railways "in the interests of the public." Many trolley lines have been obliged to carry school children for half fare in places where the school houses are inconveniently situated, though when there is no public service corporation to impose upon, the taxpayers make special appropriations for transporting pupils in carriages or what not, and seem to regard the expense as a proper penalty for their lack of judgment in locating the most important of all public buildings. In some places the street car company has been obliged to pave from curb to curb, the highways in which it occupied but a few feet of width. Again, a railway is granted some right, called for by public convenience and necessity only on condition that it will bear the entire expense of widening two miles of street. Elsewhere, the electric road is compelled to remove not only the snow that Heaven sends upon its track, but also that which is sent upon the backyard and sidewalk of every one who has a shovel and broom with which to unload his burden upon the company which must clear the whole roadway.

Various street car companies have been required to light, as well as pave, repair and clean, thoroughfares that never before had been paved, repaired, cleaned or lighted. Legislation has put it into the power of a little town to compel the street car company to pay ostensibly for the maintenance of the highway in which its tracks are laid more money than the town's entire appropriation for the maintenance of all its highways. In one case a Massachusetts village exacted for the privilege of crossing a lonely corner the building of two miles of spur track over which its citizens must be transported free, for all time.

In the enthusiasm of "control" the public has taken no thought of the inevitable consequences of imposing too onerous burdens. It is not a question of the willingness of street railways to do for the community all that is reasonable—and even some things not entirely reasonable. There is a limit to the ability to do, and that limit has been passed in places. Yet there is no sign of a halt. Already there has been introduced at the present session of the Massachusetts legislature a bill for three-cent fares in one city, and another bill for half rates for adults going to evening schools. There is no pretense of justice in such measures; they are frankly exhibitions of the "strong arm" of the demagogue.

Street railway legislation in the future must be in the direction of protecting the companies which furnish local transportation service. Restrictions upon the companies have gone so far that there must now be restrictions upon the public,—at least to the extent of breaking the force of the club so recklessly flourished over public service corporations. It is significant that no municipally operated public service is expected or allowed by the thrifty taxpayers who have to pay the costs on both ends to stray into the fields of philanthropy which the privately owned corporation is expected to cultivate with such diligence.

THE GERMAN STÄDTETAG

By Louis N. Robinson,
Ithaca, N. Y.

The methods till lately employed by cities in working out their problems were highly individualistic. Each city did what was right in its own eyes,—with the result that the problems remain still unsolved. But in recent years co-operation among cities has come about and the idea is gaining ground that interchange of facts and experience is as indispensable in city affairs as in other lines of work. In America this idea of co-operation has found expression in various leagues and associations already familiar to readers of this magazine. Of similar organizations in Germany the largest is the German Städtetag, which, since its inception at the City Exposition in Dresden, 1903, has grown with such rapidity that an account of it may be considered timely.

Briefly stated, the German Städtetag is a voluntary union of cities and of associations of cities. Each city of the empire having a population of twenty-five thousand is eligible to membership. Furthermore, associations of smaller cities which together have a population of more than twenty-five thousand are admitted.[1] Membership in the Städtetag carries with it the pledge to pay the membership dues for at least five years. At the end of that time membership may be dropped if proper notification is given. In the meetings of the Städtetag, each city or each separate association of cities has the right to be represented through authorized persons and has, without regard to the number of its inhabitants, at least one vote on all questions. If the population goes beyond the fifty thousand mark, a second vote is given. To a population of two hundred and fifty thousand, three votes are given; to a population of three hundred and fifty thousand, four votes; and so on, an additional vote for each additional hundred thousand. The money necessary to meet the expenses of the Städtetag is raised by an assessment levied on each member in proportion to the number of its inhabitants—a certain sum for each thousand. As a unified body, the Städtetag is represented first of all by an administrative committee of twelve members. These are elected by the Städtetag, and hold office until the next election, which is the last piece of business at each regular meeting. The administrative committee selects from among its members a chairman who is the authorized representative of the administrative committee and of the Städtetag, and is the presiding officer in the meetings of each. There is also a second committee which includes the administrative committee already mentioned and members selected by the Städtetag from various city councils. This second committee can be convoked by the chairman of the administrative committee whenever it seems desirable by reason of important matters that a larger number of the cities be represented in the administrative deliberations. The term of office is the same as that for the first committee.

---

[1] Five associations of cities have joined the Städtetag. In these five associations two hundred and seventy-one cities are included. Of the cities having a population of twenty-five thousand or more, one hundred and sixty-nine have become members. The three city states—Hamburg, Bremen and Lübeck—have not yet entered the union.

The purpose of the Städtetag is through unified action to care for the welfare of the cities as a whole, and to provide a means whereby the cities through suggestions, advice and example may mutually assist one another. It has two ways of doing this,—by holding regular meetings and by maintaining a central bureau.

From time to time it meets as a body and discusses questions of city policy. Its first meeting was held on November 27, 1905, in Berlin. The administrative committee had previously drawn up a set of resolutions dealing with the meat question. These were thoroughly discussed and almost unanimously adopted. They formed the basis of the petition presented by the administrative committee to the Imperial Chancellor and the Reichstag in November, 1906.[2] It is planned to hold the next meeting in July, 1908, in Munich, with the credit relations of the German cities, especially bonded indebtedness, as the chief subject of discussion.

More important than the meetings of the Städtetag is the central bureau opened on April 1, 1906, in Berlin. The director of this bureau is selected by the administrative committee and must be a man educated in law or in political economy and familiar with city laws and city administration. He is furnished with a staff of helpers and secretaries, and under the oversight of the administrative committee carries on the work pertaining to the office.

The tasks which this central office has undertaken are many. A preliminary step for all its other activities is the creation and maintenance of a special library dealing with city affairs. Designed to be of use in research work, it includes not only books and other publications common to all libraries, but also a variety of material such as schedules, public announcements, copies of important documents and newspaper clippings. Each member of the Städtetag is pledged to furnish free of charge a copy of all its more important printed matter relating in any way to city government or to city life. In addition scientific studies and standard works are purchased directly with money set aside out of the income of the Städtetag.

Not counting some six hundred books and written articles presented by the city exposition of Dresden, the library now includes over a thousand general administrative reports and city budgets, more than eight thousand local laws, tariffs, and service instructions, hundreds of police regulations and city council decrees, historical works and statistical material of all kinds.

The material is grouped according to the following arrangement:

I (*a*) Administrative reports.

---

[2] The prevailing sentiment of the petition and of the resolutions adopted by the Städtetag was that Germany itself is not in a position to furnish a supply of meat adequate to the demands of a rapidly increasing population and that measures should be immediately taken to provide for its importation from other countries. On account of the dissolution of the Reichstag no action was taken and the petition was handed back. The administrative committee decided not to present the petition to the newly elected Reichstag, but to consider the matter further.

(*b*) Current bills, municipal journals, reports of sittings.
(*c*) Personal information, directories, etc.

II. Budgets and final accounts.
III. Local laws, instructions and other administrative papers, important contracts, police measures.
IV. Statistical material.
V. Historical works.
VI. Various publications not to be brought under I, IV, V.

Within each group the material is arranged alphabetically by cities, so that under the name of each city may be found the books or other articles dealing with that special group of the city's activities. All representatives of the cities or of the associations of cities have the right to make use of the library. The director may also grant this privilege to representatives of city boards or to private persons for the purpose of study.

No charge is made except in cases where the collection of voluminous material is demanded. Provision is also made for loaning the material to the parties mentioned, but only in so far as it is not needed at the bureau itself. The aim is to make the library the chief center for the scientific study of city affairs. It is open on weekdays from 9 A. M. to 2 P. M., and offers to the investigator the latest, the best, and the most complete material for study in the activities of German cities that can be found anywhere.

With this library as a source, the central bureau offers to furnish information to the members of the Städtetag, to smaller municipalities, to local boards and to private persons. If the desired information requires a considerable amount of work a charge may be made by the director, otherwise the information is furnished without cost. It does not pretend to be able to answer every question that may be asked. In legal questions especially, it attempts only to refer to similar cases, if there have been such in other cities, or to point out the best material bearing on the subject. It is, however, in a position to furnish information on a host of questions likely to perplex the minds of city legislators. If an expression of opinion from other members of the Städtetag is desired, the central bureau sends the question around and prepares the answer according to the reports received. This demand for information has two good effects. It may help the seeker over a difficult problem and it makes it possible for the bureau to keep alive to the prevailing situation and to grow in depth and breadth of knowledge. In the first year of the bureau's existence, one hundred and thirty-two requests for information were made, and in forty per cent of these cases charges were made.

Another task the central bureau has set itself is the publication of a journal designed to meet the needs of a larger circle of information seekers. The aim is to digest the material furnished by the municipalities belonging to the Städtetag, and to make known through the columns of the journal items of common interest to the cities. Peculiar city arrangements, regulations, administrative rules and decisions of the higher courts in regard to city cases, etc., are noted, and attention is called to new publications likely to be needed by the members of the Städtetag. The journal also serves to make known the decisions and reports of the administrative committee. Each member receives according to its size from ten to sixty copies of the journal, and additional copies may be secured at a small price.[8] It is published at no definite intervals, but according to need, usually every four to six weeks.

Thus in at least one old-world country, the movement toward co-operation among cities has evolved into a fully national institution, but has not overstepped national boundaries, as has, for example, the League of American Municipalities, organized in cities situated some in Canada and some in the United States,—a league, in other respects, perhaps not so well under way as the German one. At a time when the far-sighted are looking to every department of life to furnish threads to bind the South American countries to us, one regrets that this league, or at any rate some one of the numerous analogous associations, has not expanded from North to South America. Another and more informal kind of expansion possible for us is some sort of interchange of information with the German Städtetag,—a move which would certainly be agreeable to them.

---

[8] Private persons may also secure the journal by addressing the director of the central bureau, Am Kölnischen Park 8, Berlin, Germany.

BOOK DEPARTMENT

NOTES

Allin, C. D. *The Early Federation Movement in Australia.* Pp. 431. British Whig Publishing Company, Kingston, Ontario, 1907.

The first impression which the American reader will gain from Dr. Allin's book will doubtless be that he has gone into unnecessary and sometimes tedious detail. Though the work is not as readable as it would have been had some of the detail been omitted, it is perhaps fortunate that the circumstances attending the development of the Australian Federation are made easily available for American students, for it is probably by students, for the most part, that Dr. Allin's work will be perused.

The growth of the Federation movement, which was started by the adoption of our Federal Constitution, is a subject in which all Americans should be interested. The Australian Federation, far from being a copy of the government of the United States, with minor changes to fit local conditions, is a natural growth inspired entirely by Australian circumstances. So far as the Constitution of the United States has served as a model, it has been for the purpose of avoiding obvious dangers rather than for close imitation.

The five stages of development to which Dr. Allin calls attention are: (1) Military or civil autocracy; (2) the stage of the governor and legislative council; (3) the establishment of the representative legislature; (4) the granting of responsible government with popular control over the executive; and (5) the establishment of self-government federation. The present volume brings Australian history through the first two stages of this development.

Atlanta University Publications. No. 11. *The Health and Physique of the Negro American.* Pp. 112. Price, 75 cents. Atlanta: University Press.

The first ten years' cycle of these papers was completed last year. This volume is, therefore, the beginning of the second. Owing very probably to lack of funds for individual investigations, it contains less new material than the other volumes. There is an excellent summary of the views of leading anthropologists relative to the negro with a long series of half-tones portraying the different types of negroes now in this country. A valuable article, by Prof. Herbert A. Miller, of Olivet College, on "Some Psychological Considerations of the Race Problem," is reprinted, and deserves attention. Other topics discussed are increase of the negro, mortality, insurance, medical schools, physicians, dentists and pharmacists, etc. The volume contains a great deal of timely information and should be of assistance to those who are seeking to understand the development among the negroes.

Barker, J. Ellis. *Modern Germany.* Pp. viii, 583. Price, $3.00. New York: E. P. Dutton & Co., 1907.

Reserved for later notice.

Benton, E. J. *International Law and Diplomacy of the Spanish-American War.* Pp. 300. Price, $1.50. Baltimore: Johns Hopkins Press, 1908.

Reserved for later notice.

Bunn, C. O. and **W. C.** *Constitution and Enabling Act of the State of Oklahoma.* Pp. 189. Price, $3.00. Ardmore, Okla.: Bunn Bros., 1907.

This is an annotated and indexed edition of the state constitution. The instrument is well analyzed so that the provisions on any subject can be found at once. A tabulation of this sort is especially important in this constitution, which, from its length, becomes almost a brief code. Officials as well as laymen will find this book both convenient and comprehensive.

Calvert, A. F. *Toledo.* Pp. xxiii, 169, and 511 plates. Price, $1.25. New York: John Lane Co., 1907.

Reserved for later notice.

Clarke, C. *Sixty Years in Upper Canada.* Pp. vi, 321. Price, $1.50. Toronto: William Briggs, 1908.

Cleveland, F. A. *The Bank and the Treasury.* New Ed. Pp. xl, 371. Price, $2.00. New York: Longmans, Green & Co., 1908.

Reserved for later notice.

Davenport, H. J *Value and Distribution.* Pp. 582. Price, $3.50. Chicago: University Press, 1908.

Reserved for later notice.

Dawson, W. J. *A Prophet in Babylon.* Pp. 366. Price, $1.50. New York: F. H. Revell Company, 1907.

This volume, written by Dr. W. J. Dawson, the famous London evangelist, is intended to show what latent power there is in most Christian churches, and what can be accomplished by the churches in wisely combining their efforts for the common good. The story is of a man who had not only the ability to understand present-day social conditions, but also the courage to embody them in his life's work. The story involves interesting characters and throughout is interwoven the truth that "life grows by giving and gains by losing,"—that he who serves his fellowman derives the most happiness out of life.

Dewey, D. R. *National Problems.* Pp. xiv, 360. Price, $2.00. New York: Harper Bros., 1907.

Reserved for later notice.

Dunmore, Walter T. *Ship Subsidies.* Pp. xviii, 119. Price, $1.00. Boston: Houghton, Mifflin & Co., 1907

The small volume on "Ship Subsidies," written by W. T. Dunmore, instructor in the law school of Western Reserve University, in competition for the Hart, Schaffner and Marx prize, is a well-balanced, carefully-written book, giving a brief but highly satisfactory summary of the main phases of the much controverted question of how best to aid the American merchant marine. A short but carefully selected bibliography is placed at the beginning of the book. The treatment contains a review of American shipping, an account of its present status and a consideration of the remedies that have been proposed, and concludes with a discussion of the proper policy to be adopted. Mr. Dunmore believes in allowing Americans to buy their ships abroad and register them under our flag if they desire to do so. He thinks that tariffs on shipbuilding material should be unconditionally removed, and is of the opinion that the mail subvention act of 1891 was a wise measure. The author approves of giving American ships the benefit of discriminating duties in the indirect trade.

Durham, R. L. *The Call of the South.* Pp. 439. Boston: L. C. Page & Co., 1908.

Fairlie, J. A. *Essays in Municipal Administration.* Pp. 374. Price, $2.50. New York: Macmillan Co., 1908.

Reserved for later notice.

Fraser, John Foster. *Red Russia.* Pp. x, 288. Price, $1.75. New York: John Lane Company, 1907.

Among all the volumes dealing with recent conditions in Russia there is no more vivid portrayal than "Red Russia," from Mr. Fraser's well-known pen. "Red Russia" is the product of extended journeys through the worst regions of unrest, especially in Warsaw, Moscow, Odessa, and the Caucasus district. The position of the Jew and Armenian is discussed at length. The description of Warsaw, the city of terror, as a sample, is realistic and gruesome, tending to satisfy the most blood-thirsty.

Aside from the morbid fascination of the accounts of barbaric fiendishness and oppression, most of the interest centers in the author's analysis of the Czar's character and weakness, the lack of a truly great man, and most of all in the summation of the underlying causes or the "gist of the matter." In a word, the bureaucracy, the Czar's weakness and the political corruption, making brute force the only weapon left to the government, are the causative conditions of the bloody turmoil. Without salvation through the foreign elements in the empire Mr. Fraser foresees only tragedy ahead for Russia.

It must be admitted that the author very skillfully re-creates the Russian situation before his reader with sensations not of the most agreeable sort. "Red Russia," to say the least, is a harrowing exposition of gruesome conditions. A book, the theme of which is represented by a frontispiece depicting peasants dying of starvation, is not calculated to be cheerful reading.

Freeman, W. G., and Chandler, S. E. *The World's Commercial Products.* Pp. viii, 391. Price, $3.50. Boston: Ginn & Co., 1907.

This is a large, sumptuous-looking book, with large pages and a wonderful wealth of excellent illustrations, but it is nevertheless a disappointment. It suggests the futility of the preparation of such a book except as a composite work of a large number of writers, each expert in his field. It is to be hoped that the book in general is more accurate than the chapter on corn which I have critically examined as a test. The eight pages devoted to this product have much important matter, but seem to show that they were written by a man who knew practically nothing of the economic side of agriculture. The only notices of any use of corn as a forage plant were indirect and unimportant references, yet rather elaborate mention is made of the use of the inside wrapper of the husk for cigarettes in certain East Indian islands. No mention was made of the climatic conditions that limit its growth; no map was shown giving the actual areas of its production; and no mention is made of its place in crop rotation. There is a splendid full-page picture of Portuguese women shelling corn with a flail, but a poor insert of the American steam sheller.

The writer seems to be ignorant alike of the facts and prospects of production. In Europe, Italy and Spain are mentioned among the leading corn countries, whereas they are greatly outranked by the entirely neglected lower Danube Valley. Possibly the crowning corn inaccuracy is the statement that Argentina will soon outstrip the United States as a corn-producing country. According to the excellent little commercial geography just published by Prof. E. Friedrich, of the University of Leipzig, the ratio between these countries in 1906 was almost exactly sixteen to one. This is true not only in corn, but also in population.

The limitations of space are severe. For example, they restrict the whole class of nuts to 12 titles and 500 words, and give apples and the commerce therein 350 words. Such unsatisfactory limitations are probably put upon any one who attempts this large work in a single volume.

Fynn, A. J. *The American Indian as a Product of Environment.* Pp. 275. Price, $1.50. Boston: Little, Brown & Co., 1907.

This volume is a book for the general reader, or, as the author says, it is a sketch rather than a photograph. In an introductory chapter the general dependence of life forms on environment is presented through the usual familiar examples. The author then passes to a consideration of the principal aboriginal types found in the western world and the different physical conditions under which the individual groups lived. In this single chapter only the most general responses to environment can be included. The remainder of the volume is devoted to the special consideration of the Pueblos under the following heads: lands and homes; food and clothing; government and social life; education; industries, arts and sciences; religion; dances and festivals. A concluding chapter ventures to account for Indian character as it was originally, and as it has been modified by contact with the white man, with a comparison of the Pueblo and Eskimo to clinch the argument of environment influence.

Some of the data has been gathered at first hand by the author, but from the standpoint of the ethnologist the book contains little that is new beyond the bringing together of results and opinions of various other writers. From the standpoint of the general reader, however, the book must prove decidedly interesting and suggestive. It is well written in an easy entertaining style, and must be regarded as a very acceptable contribution to the growing literature popularizing the geographic control of racial development.

Gomme, George Laurence. *The Governance of London.* Pp. xii, 418. Price, 15s. London: T. Fisher Unwin, 1907.

The scholarly Clerk of the London County Council has put the results of years of research into his illuminating volume explaining the origin and development of the political institutions of London. In general Mr. Gomme's thesis is that the institutions of London have had a continuous evolution from Roman times to the present,—London is neither a Roman city nor a Saxon city, but it is a coalescence of both types. The following quotation from the closing chapter of the book indicates very clearly the conclusion which Mr. Gomme reaches as the result of his investigation: "It must, however, be borne in mind that continuity from Roman times has not given us a Roman London for all time. The Saxon has been there, and being there, he has left his stamp upon the great city. We thus avoid the illogical conclusion dear to some scholars to-day, that the presence and continuity of Roman civilization mean a Romanized Britain, and hence a Roman origin for English institutions. This, of course, is Mr. Coote's famous theory. It is at the back of Mr. Seebohm's research into the village community system. It appears to be the tendency of Mr. Haverfield's more recent research. There is no evidence to support such a conclusion. The English conquest was a veritable conquest, and the manner of the English relationship to London is typical of the manner in which English institutions were planted in the land regardless of what else might be there. . . . If I have shown Roman London to have begun London history, I have not shown that it continued it through the ages, and this, if I mistake not, is the surest sign that my line of research has been the correct one. London is Roman London Englished and made fit for its service to the English people."

Grimshaw, B. *Fiji and Its Possibilities.* Pp. xiii, 315. Price, $3.80. New York: Doubleday, Page & Co., 1907.

Reserved for later notice.

Guthrie, William B. *Socialism Before the French Revolution.* Pp. xviii, 339. Price, $1.50. New York: Macmillan Company, 1907.

This solid, scholarly and useful work covers the writings of Thomas More, Campanella, Morelly, and, more briefly, of the revolutionary radicals, Boissel, Babeuf, Saint-Just, Mably, Linguet and Barnave. In treating of each writer, the author first carefully studies his economic, social and intellectual environment, thus laying the foundation for an intelligent discussion of his theories. He then analyzes those theories in detail, especially as they deal with property, luxury and the economic motives, the equitable basis of distribution, the state and its functions, communism and the family, the relative importance of environment and of inborn characteristics in determining human life. The book deals with social ideas, not merely economic ones, and may be regarded as a successful attempt to indicate the resemblances and differences between the radical theorizing of the three centuries preceding the Revolution and the socialist thought of modern times.

Among the most interesting chapters are those dealing with Morelly and the little-known writers of the revolutionary period. Dr. Guthrie cautiously concludes, in opposition to those writers who have recently denied the existence of socialistic tendencies in the great French upheaval, that "the Revolution was marked, if not much influenced, by a group of very bold, able and radical men who were attached to the propaganda of equality, communism and radical social action in general."

Every page of Dr. Guthrie's work gives evidence of patient and scholarly research. It brings together and presents in simple, direct form the ideas of an interesting group of writers heretofore too little known, and practically inaccessible in English. The interpretation of these writers is fair, sane and conservative, while the abundant and excellent footnotes make it possible for the reader to go to the original sources and form his own judgments. The book is one to stimulate interest on the part of all students of social theory and well deserves a place in the library of every such student.

Hague Ordains, As the. Pp. vi, 359. New York: Henry Holt & Co., 1907.

In the early chapters the author tells of her journey from Russia to Japan. She set out to be near her husband, who was a prisoner in Matsuyama. She became a daily visitor at the barracks hospital. The book is a journal of her experiences and impressions, together with many incidents of war reported by the new prisoners who were constantly arriving. The volume is written in bright, pleasing style, and is to the end readable and informing. The last half is not free from repetition, which from the pen of a less gifted author might easily become tiresome. The life in the barracks hospital is presented as the journal progresses from day to day. New prisoners tell their stories and old prisoners make their moan; the bitterness and indifference of the average Russian soldier is reiterated no less than is the cupidity and inefficiency of most of the army and navy officers. All the shame and hopelessness of the defeated nation are freely commented upon. In striking contrast to these dark stories are those praising the military system of the Japanese people.

The theme throughout, if a journal may be said to have a theme, is the "preparedness" under all circumstances of the Japanese officers and the equally certain "unpreparedness" and hesitation of the Russian officers.

Harwood, W. S. *The New Earth.* Pp. 378. Price, $1.75. New York: Macmillan Co., 1907.

Reserved for later notice.

Hattersley, C. W. *Uganda by Pen and Camera.* Pp. 138. Price, $1.00. Philadelphia: The Union Press, 1907.

This volume presents a description of the social, economic and religious conditions of a people near the heart of Africa. The photographic illustrations, with which this romantic description is interspersed, make it interesting and realistic. After a discussion of the place and its location, the people and their customs, a study of "The Old Religion" is presented, which will be of interest to ethnologists. The remainder of the work deals with the method and work of the missionaries in replacing these early customs, and the rapid progress made since this people came in contact with modern civilization.

Hemiup, Maria R. *Our World.* Pp. 270. Price, $2.00. Geneva, N. Y.: Hemiup Publishing Co., 1907.

Henderson, Charles R. *Outdoor Labor for Convicts.* Pp. iv, 154. Price, 75 cents. Chicago: University of Chicago Press, 1907.

This book is a report on outdoor labor for convicts prepared for the governor of Illinois. It consists of translations of some twenty papers presented before the last International Prison Congress by men representing most of the European governments, together with some comments by Professor Henderson.

Holland, Clive. *Old and New Japan.* Illustrated by Montague Smyth. Pp. ix, 292. Price, $5.00. New York: E. P. Dutton & Co., 1907.

From every point of view—literary, scientific and artistic—the work on "Old and New Japan," written by Mr. Clive Holland and illustrated by Mr. Montague Smyth, reaches an exceptionally high standard of excellence. Mr. Holland understands as few foreigners do the history, institutions, national traits and psychology of the Japanese people. He seems, moreover, to have an unusual grasp of the Japanese language so extremely difficult for people of the western nations to acquire. The earlier chapters of the volume deal with the legendary genesis of Japan and the national spirit, its religion, its temples and ancient shrines. Several charters are devoted to the home life and social customs. There is one chapter each upon city conditions, life in the country, and the Japanese language; also an excellent one upon art, and a brief but instructive discussion of commerce and modern tendencies. The illustrations by Mr. Montague Smyth consist of fifty colored pictures beautifully reproduced. They not only make the work artistic, but they greatly assist Mr. Holland in his interpretation of the people.

Hoyt, J. C., and Grover, N. C. *River Discharge.* Pp. viii, 137. Price, $2.00. New York: John Wiley & Sons, 1907.

The character and value of this technical manual are best indicated by the fact that the authors are respectively the engineer in charge of hydraulic computations, and assistant chief hydrographer in charge of river measurements, for the United States Geological Survey. The text covers the conditions affecting stream flow; instruments and equipment for stream measurement; directions for the establishment of stations and measuring discharge; with formulæ and tables for use in the data obtained. An accompanying map shows the drainage basins of the United States and the average yearly rainfall over each. The present rapid strides in the development of rivers for irrigation, navigation and power make this side of the question especially important. The volume is certain to meet the needs of engineers, students and capitalists, to whom for the first time much data from government reports is here made readily accessible.

Hull, Walter Henry (Ed). *Practical Problems in Banking and Currency.* Pp. 585. Price, $3.50. New York: Macmillan Company, 1907.

The editor of this compilation was a student of the University of Chicago and not a member of the faculty. The book is composed of addresses taken mostly from the publications of the various bankers' associations without much discrimination in separating the wheat from the chaff. The addresses are grouped under three heads: General banking, banking reform and currency, and trust companies. There are sixty-two of them in all, and among the authors appear the names of nearly all the men who have been prominent in the last five years in the discussion of the currency problem. There is here a great mass of suggestive material for the student of banking valuable to him for the purpose of getting the point of view of men who are actively engaged in the business. The teacher might find it of use for supplementary reading, but it is too superficial and fragmentary to be used as a text. Some day, when a rational currency system shall have been evolved out of the present chaos of plans, we will turn to this volume and smile at some of the curious ideas prevailing among bankers at the beginning of the century.

Hunt, Wm. (Ed.) *The Irish Parliament.* 1775. Pp. xxxiv, 92. Price, $1.20. New York: Longmans, Green & Co., 1907.

Kellogg, V. L. *Darwinism To-day.* Pp. xii, 403. Price, $2.00. New York: Henry Holt & Co., 1907.

Reserved for later notice.

Kelly, Edmond. *The Elimination of the Tramp.* Pp. xxii, 111. Price, $1.00. New York: Putnam's Sons. 1908.

In view of the widespread industrial depression, this little book, which belongs to the "Questions of the Day" series, is most timely. Mr. Kelly believes that tramps may be eliminated in America by the institution of labor colonies similar to those in Holland, Belgium and Switzerland, with such modifications as local conditions necessitate. The author for many years has studied the tramp problem. He has had the privilege of observing the European colonies and is evidently particularly favorably impressed by those of Switzerland. Aside from the question of the value of the method in America, the book gives a very good account of the European colonies and deserves careful consideration.

Kemmerer, E. W. *Money and Credit Instruments in their Relation to Prices.* Pp. xi, 160. New York: Henry Holt & Co., 1907.

This monograph forms Volume I of the Cornell studies in history and political science. In it the author presents a detailed study of money and credit instruments in their relation to general prices.

As one might expect, such a subject involves much theory. The first eight chapters, which form Book I, bear the title, "The Problem.—theoretical." It discusses the so-called quantity theory of money, pro and con. In it is first presented the relation between the amount of money and prices in a hypothetical society. This forms the basis for a discussion of more complex societies like our own in which paper and credit money form a prominent part in the exchange medium. The author reaches the conclusion that while these various elements complicate the problem they do not overthrow "the old quantity of theory of money as that theory was held by the fathers of political economy and is still held by the majority of its students."

Book II is entitled, "The Problem—statistical." Its purpose is to test statistically the principal conclusions developed in Book I. Taken as a whole, the monograph, with its accompanying table of reference, shows detailed research and great care in presentation. To those persons whose tastes do not run toward mathematics, the book may prove difficult reading, as Dr. Kemmerer has made frequent use of algebraic equations, tables of figures and diagrams. The volume has great value as special reference for students doing advanced work in economics. It would hardly be profitable, however, to place the book in the hands of one not thoroughly familiar with the elements of the subject.

Kropotkin, Prince. *The Conquest of Bread.* Pp. xiv, 281. Price, $1.00. New York: G. P. Putnam's Sons, 1907.

Prince Peter Kropotkin has written an interesting and many-sided book. Even a journal devoted to art has seen fit recently to review and praise it. The volume suggests that the author is inclined to see visions and follow them. I am very sure that if he had devoted five years of his life to the cultivation of a small patch of the earth's surface, the part of the book dealing with agriculture would have been different. Everywhere in the book he rides his ideas far and hard, and attempts to make them stand for more than they can, upon the average, be worth. The book, nevertheless, is very suggestive, with a sound kernel.

In the chapter on decentralization of industry he prints a graphic picture of the spread of industrialism from England to France, to Germany to America, to Bohemia, to Italy and to India. Switzerland, which has neither coal nor iron,—nothing but excellent technical schools,—makes machinery better and cheaper than England. So ends the theory of exchange. The tendency of trade, and all else, is toward decentralization. It is to the advantage of every region, every nation, to grow its own wheat, its own vegetables and to manufacture all produce it consumes at home. Specialization is a hindrance to progress. Agriculture can only prosper in proximity to factories.

This kernel idea which the author previously exploited in "Fields, Factories and Workshops" is one full of possibilities and towards which our industrial future is almost sure to tend, but Prince Kropotkin generalizes on the best possible performances. He proposes to feed Paris from the two departments of Seine and Oise which have but one acre for 2.6 persons. To get this population supported on that area of ground he assumes forty-four bushels of wheat per acre; he also assumes that an ox reaches the astounding proportions of 800 pounds of dressed meat at the end of a year, and he would support 660,000 of them on 217,500 acres of ground. This will doubtless make the Illinois producers of export beef take notice, particularly as these animals appear to produce milk.

The Prince's ideas about the "Coming Revolution" appear to involve revolutions in people and their qualities and capacities as well as in their methods of production and distribution, but the keynote of his distribution is the simplification brought through having all wants of man supplied by himself and his neighbors.

Lafayette-Savay, N. *Emancipation.* Pp. 161. New York: Knickerbocker Press, 1908.

Lewis, A. M. *Evolution: Social and Organic.* Pp. 186. Price, 50 cents. Chicago: C. H. Kerr & Co., 1908.

Liebknecht, W. *Karl Marx Bibliographical Memoirs.* Pp. 181. Chicago: C. H. Kerr & Co., 1908.

Lloyd, H. D. *A Sovereign People.* Pp. xiii, 273. Price, $1.50. New York: Doubleday, Page & Co., 1907.

Reserved for later notice.

Mahan, Alfred T. *From Sail to Steam.* Pp. xvii, 326. Price, $2.25. New York; Harper & Bros., 1907.

In his volume upon recollections of naval life Captain Mahan throws many interesting sidelights upon the history of the American navy. The early chapters of the book describe the conditions of the navy before the war of secession. The relation of the naval academy to the navy is also treated, and then follow charming narratives of personal cruises made during the earlier years of the author's connection with the navy. These stories of personal experiences before the Civil War give a most vivid picture of the actual conditions of life on an American war vessel at that time. Two chapters are devoted to incidents of the war and the blockade service. There are two chatty chapters upon a trip to China and upon impressions of China and Japan. Possibly the most interesting chapter in the book is the one in which Captain Mahan tells of the establishment of the Naval War College and of the revival of public interest in the navy. The author's style is pleasing and every page of the book makes delightful reading.

Mallock, W. H. *A Critical Examination of Socialism.* Pp. vi, 302. Price, $2.00. New York: Harper & Bros., 1907.

Reserved for later notice.

Mansilla, L. V. *Mis Memorias.* Pp. 351. Paris: G. Hermanos.

Mansilla, L. V. *Un Pais sin ciudadanos.* Pp. 141. Paris: G. Hermanos.

McCormick, F. *The Tragedy of Russia in Pacific Asia.* Two vols. Pp. xx, 913. Price, $3.00 each. New York: Outing Publishing Co., 1907.

Reserved for later notice.

Merritt, Albert N. *Federal Regulation of Railway Rates.* Pp. xii, 240. Price, $1.00. Boston: Houghton, Mifflin & Co., 1907.

The essay which in 1906 secured the first prize in the Hart, Schaffner and Marx essay contest was Mr. Merritt's volume on "Federal Regulation of Railway Rates." After giving a brief statement of the railway problem Mr. Merritt discusses the question whether American railway rates are excessive, and comes to the conclusion that the returns upon the actual capital invested in railways have been moderate. In chapter two the author maintains the necessity of federal control over rates to prevent unreasonable personal and local discriminations. Chapters 3, 4 and 5 are devoted to a consideration of rate fixing by commissions, the conclusion of the author being that railway regulation by means of commissions is unsatisfactory. The plan of regulation which he thinks should be adopted is clearly indicated by the following quotation taken from his chapter entitled "A Rational Plan for Public Control." "We propose, therefore, that a special court be established for the purpose of determining the lawfulness of the rates charged by common carriers. This court should be composed of five or seven members. The salary and dignity of the judges should be raised, if possible, to a point equal to that of the members of the Supreme Court. The transportation court should have final jurisdiction in all cases except where its order is alleged to violate some of the constitutional rights of the carrier or other interested parties, in regard to which point the Supreme Court should have appellate jurisdiction."

National Association of Railway Commissioners, Proceedings of the Eighteenth Annual Convention of. Compiled by H. B. Meyers; edited by Elmer E. Barrett. Pp. 520. Price, $7.50. Chicago: H. B. Meyers, 1907.

Transportation literature has been enriched by this publication of the National Association of Railway Commissioners. In a quarto volume of 520 large double-column pages there are compiled the laws of the United States and of all the states on the regulation of railways. The book also contains digests of the principal Supreme Court decisions concerning interstate commerce. The national and state laws and the decisions of the courts are completely indexed. The volume will be of great service to lawyers, railroad commissioners, railroad officials and students of transportation generally.

National Tax Association, Addresses and Proceedings of the First National Conference. Pp. 675. Price, $4.00. New York: Macmillan Co., 1908.

Nietzsche, F. *Human, All Too Human.* Pp. 182. Price 50 cents. Chicago: Charles H. Kerr & Co., 1908.

Nuttall, Z. *The Earliest Historical Relations Between Mexico and Japan.* Pp. 47. Price, 50 cents. Berkeley, Cal.: University Press.

Osgood, Elliott I. *Breaking Down Chinese Walls.* Pp. 217. Price, $1.00. New York: Fleming H. Revell Company, 1908.

This is a study of Chinese conditions and the efficacy of medical missions, by a physician who spent eight years in a hospital and dispensary at Chu Cheo, forty miles northwest of Nanking. The author has shown that the missionary "must demonstrate by living illustrations the superiority of Christianity over heathen systems;" that dispensaries, hospitals and schools have been opened to prove the advantages of a Christian civilization; and that the home-life of the missionary is as effective an agency in regeneration as the pulpit and the hospital.

The trained physician has been "the entering wedge" to reform conditions of uncleanliness and medical, social and religious ignorance. The medical skill proves the power of modern science over disease, habit and misery. The home and social relations stand out as a rebuke to the filthy hovels and the degraded position of woman. With his gospel of love, practiced daily and preached frequently, he opens the way for the acceptance of the Christian religion. Many cases are cited in which men have been freed from disease and the opium habit, woman given her rightful place socially, superstition and ignorance dispelled by education, and the higher life entered with gladness—all the result of the leavening influence of a missionary family.

O'Shea, M. V. *Linguistic Development and Education.* Pp. xviii, 347. Price, $1.25. New York: Macmillan Co., 1907.

Reserved for later notice.

Parrish, Randall. *The Great Plains.* Pp. xiii, 398. Price, $1.75. Chicago: A. C. McClurg Company, 1907.

The purpose of the author, as expressed in the preface, was to write a condensed romantic history of the great plains, which would appeal to that large class of readers who have little time for exhaustive reading, and as little taste for a direct and bare narrative of facts. If it were presented as an accurate and well-balanced historical study of the great plains we would consider it open to criticism both as to arrangement and over-emphasis. In style it is elaborate, succinct, graphic, ornate, colloquial or interpretative, at the will of the author, whose versatility indicates a thorough acquaintance with the historical data, and a keen appreciation of the spirit of frontier life. The characteristics of the people involved in the different stages of development are portrayed with such detail as to overshadow the industrial responses. The book would be as readable, stronger, and more symmetrically poised, had the latter been outlined more clearly.

Of those who figured conspicuously in exploring and subduing the "Great Western Desert," the following may be mentioned: explorers for the governments of Spain, France and the United States, American traders and trappers, missionaries, Mormons, California gold-seekers, ranchmen, Colorado gold-seekers, frontier merchants, the United States Army, and permanent settlers. The book contains a very interesting description of the modes of travel and the different stages of transportation, from the river canoe and the Indian trail to the completion of the Union Pacific Railroad. Mr. Parrish is one of the few writers to give Thomas Jefferson due credit as an inspirer of the Louisiana Purchase, which was immediately followed by the organization and dispatch of the Lewis and Clark Expedition.

Petroleum Industry, Report of Commissioner of Corporations on. Two vols. Pp. xxv, 965. Washington: Government Printing Office.

Phillips, U. B. *History of Transportation in the Eastern Cotton Belt to 1860.* Pp. xv, 405. Price, $2.75. New York: Columbia University Press.

Popplewell, F. *Iron and Steel Production in America.* Pp. xiii, 119.
Knoop, D. *American Business Enterprise.* Pp. 112. Price, 15s. 6d.
Manchester: University Press, 1907.

The University of Manchester has attempted to get trained men into the thinking end of business enterprises in Great Britain through the establishment, by Mr. Gartside, of traveling fellowships for young men who are to study industry in foreign lands with the idea of going into industrial enterprises rather than teaching. The traveling scholar is well provided with funds, and a year ago Mr. F. Popplewell published a monograph on iron and steel in America which is a splendid example of careful observation and comparison. He traveled through centers of steel and iron manufacture and entered the works with seeing eyes, and his book contains a large amount of useful information descriptive of the iron industry in this country in comparison with the industry in Great Britain.

This year the series contains a monograph by Mr. Douglass Knoop, who has been studying industrial organization, and gives us a monograph entitled "American Business Enterprises." It is a careful, thoughtful study of a high order of excellence. It is primarily a study of integration, dealing with organization, production, selling by the manufacturer, and the effects of the same on prices and middlemen.

Powell, Lyman P. *Christian Science: the Faith and Its Founder.* Pp. xviii, 261. Price, $1.25. New York: G. P. Putnam's Sons, 1907.

Of the recent studies of the Christian Science movement this volume is superior in that the author has had access to the sources from which Mrs. Eddy draws the material incorporated in her Science and Health. From an intellectual standpoint it is difficult to see what is left of the claims of the Christian Scientists after the author has finished his discussion. Yet he is friendly in his criticisms. He recognizes, as all intelligent students must, that the strength and secret of the movement lie in something far different from its intellectual claims. The gravest defect in Christian Science philosophy the author finds in its implied attitude toward the family and toward social obligations. The volume should have careful consideration from all who are interested in the phenomenon.

Reeves, J. S. *American Diplomacy under Tyler and Polk.* Pp. 335. Price, $1.50. Baltimore: Johns Hopkins Press, 1907.

The thirteen chapters here presented dealing with the diplomatic events of the administrations of two "accidental presidents" are a publication of the Albert Shaw Lectures on diplomatic history delivered at Johns Hopkins University, in 1906. Their subject matter deals chiefly with questions of boundary—northeast, northwest and southwest. Undoubtedly the best portions of the book are the eight chapters dealing with our relations to Texas and Mexico. The author does much to dispel the prevalent belief that the "peculiar institution of the south" was an active aid to extension in the southwest. The discussion of the Mexican War is judicial and clear. It lacks the acrid character of the descriptions of Von Holst, who absorbed the viewpoint of the controversial literature from which he drew his facts.

Under the author's analysis the charge of a widespread conspiracy to extend the slave area disappears. This by no means transforms the Mexican War into an incident of which we may be proud. The motives of the secretive Polk as revealed by his diary and correspondence are fortunately not such as have generally characterized the open-handed diplomacy of the United States.

Sargent, A. J. *Anglo-Chinese Commerce and Diplomacy.* Pp. xi, 332. Price 12s. 6d. Oxford: Clarendon Press, 1907.

This book is an admirable review of British relations with China, written by a thorough scholar. The exactness of statement and lucidity of style make the work especially valuable for those who, studying the present, wish to get a clear background for the picture of contemporary events.

The chief object of the work is to sketch the important British trade relations with the East. The diplomacy of England has regularly been exercised in the advancement of the foreign commerce in those articles suited to the Eastern market. In the period of the East India Company's control, woolens were favored and were first a profitable, then a losing article of export. The company for years kept up this unprofitable commerce by making up the loss by the gain on imported teas.

The abolition of the company's privileges brought an accentuation of the grounds of conflict that were constantly threatening to break off all intercourse. The home government had no adequate means of control over its subjects,—which partly accounts for the opium war of 1840, ably criticized by the author. With the forties, too, cottons gradually took the preponderant place of woolens in Chinese imports. This favored the Indian mills, and by drawing off the bullion in that direction, cut down the power to purchase British goods. Next the growth of opium in China cut into the Indian trade; the British trade, with the opening of the Suez Canal shifts to India, and the European silk production lessens importation of fabrics. Finally the last period, beginning with 1885, brings new actors on the scene. British shippers are confronted by merchants of various other nationalities, and a readjustment of the shares in trade takes place. Japan and Germany enter as bidders in the Oriental market, and the trade, due to the growing production of manufactured stuffs in China, becomes more varied in character. American and Russian kerosene, German knickknacks and Japanese textiles, claim a share of the trade. In the last chapter the growth of the anti-foreign feeling in China and its effects on commerce are outlined. The international jealousies in the fixation of the Chinese customs tariff are also presented—especially England's unwillingness to burden imports with a higher rate of duty, because it would hinder chiefly English trade for the payment of indemnities and bonds payable in other countries.

The book is the best summary view of the development and importance of English trade with China yet published.

Scott, Sir J. George. *Burma: A Handbook of Practical Information.* Pp. x, 520. Price, $2.50. Philadelphia: George W. Jacobs & Co., 1907.

The practical information contained in this valuable handbook covers the customary topics: the country with its geography and climate, government, education and history, industries and culture, including religion, art, literature, and the Burmese music. A series of appendices give statistics of the different divisions and districts of the province, with lists of species of flora and fauna, metals, minerals, etc. Some three score illustrations, for the most part well chosen, add materially to the book, but it is unfortunate that a better map, or even a better reproduction of the map used, was not included. At times the deluge of unpronounceable Burmese names is well nigh overwhelming, and only the most vigorous application of gazetteer and atlas will make the account really intelligible. A good map would have done much to remedy this difficulty.

A province comprising less than 240,000 square miles, with a population exceeding 10,000,000 in 1901, nine-tenths of which is rural in character, makes Burma stand in sharp contrast to the populous parts of this country. The average reader will doubtless be surprised to learn that a monopoly of oil production existed in Burma before the first oil well was drilled in the United States, and that the Burmese forest reserves were created two decades before the first reservation in Oregon.' Now 20,000 square miles of forest reserves pay in more than a million dollars net revenue annually. Countries with similar possessions might learn much from an administration which produces a revenue exceeding civil expenditure by some $12,000,000 annually.

These facts are only a few of the many subjects of interest which fill most of the volume. It is by far the most convenient and satisfactory manual of information about Burma.

Scott-Elliott, G. F. *Chile.* Pp. xx, 357. Price, $3.00. New York: Chas. Scribner's Sons, Importers, 1907.

Reserved for later notice.

Shaw, A. *The Outlook for the Average Man.* Pp. 240. Price, $1.25. New York: Macmillan Co., 1907.

Reserved for later notice.

Smith, A. H. *China and America To-day.* Pp. 256. Price, $1.25. New York: F. H. Revell Co., 1907.

The previous volumes of Mr. Smith on Chinese Characteristics, Village Life in China, and China in Convulsion, have established his reputation as a keen and impartial observer. The present smaller work confirms the judgment, though it is not so satisfactory as its predecessors. The first half of the book is too much devoted to a restatement of facts and generalizations already familiar to the majority of his readers. The latter portion takes rank with the former productions of the author's pen. American treatment of China divides on the lines of purely political action in world politics and domestic legislation. In the former the United States has played a part at once dignified and unselfish. In the latter we have been provincial and arbitrary. Mr. Smith—wisely we think—does not argue for the entire abrogation of our anti-Chinese legislation, but points out that our methods of classification of immigrants and the enforcement of our laws have been such as to offer continuing insult to the awakening giant of the East. In international affairs we have shown ourselves China's most consistent friend, in our home legislation we have not even observed the ordinary international courtesies. Not until we are willing to treat China as a nation in the latter sphere as well as in the former is the way open for America to exert the wholesome influence in Asian affairs which should be her part. "The root trouble with our relations with China and more recently with Japan is the contemptuous disregard of their point of view and the childish insistence upon our own."

Steere, C. A. *When Things were Doing.* Pp. 282. Chicago: C. H. Kerr & Co., 1908.

Stevens, Albert C. (Ed.) *The Cyclopedia of Fraternities.* Second edition. Pp. 444. Price, $4.50. New York: E. B. Treat & Co., 1907.

A useful volume describing the aims, emblems, character and personnel of more than eight hundred secret societies in the United States, together with charts, plates, maps, and statistics of membership. In addition, it gives the history and genealogy of these interesting organizations, and shows their relations to one another.

It includes all the various Masonic bodies, college fraternities, mystical, theosophical and occult societies, religious and non-religious beneficiary organizations of every type, military and ancestral orders, patriotic and political societies, total abstinence fraternities, labor organizations, co-operative, socialistic, educational, social and recreative societies, revolutionary and anti-law and order bodies. There are the Ancient Order of Pyramids, the Brotherhood of the West Gate, the Order of the S. S. S. and Brotherhood of Z. Z. R. R. Z. Z., the Knights of Labor and the Grange, the Sons of Idle Rest, the Order of Reubens, the Ku Klux Klan, the Mafia, the Independent Order of Gophers, the Light of the Ages, and so on to the tramp fraternities, the "Button Gang," and the Order of Mules. In short, it seems hard to ask any question about a secret or fraternal organization that is not answered here, though of course such a work in no way takes the place of the histories of the various orders.

The amount of revision given to the second edition is slight, and most of the descriptive articles have not been brought down to a later date than that of the first edition, issued ten years ago. The section on labor organizations, as might be expected, is valueless. Notwithstanding such defects, it is a useful reference work for all interested in secret societies.

Stimson, Frederick Jessup. *The American Constitution.* Pp. 259. Price, $1.25. New York: Charles Scribner's Sons, 1908.

This is a popular but satisfactory treatment of the subject. It is a series of Lowell Institute lectures, delivered in 1907 by the professor of comparative legislation at Harvard University, who is well known for his discussions of legal and constitutional subjects. Mr. Stimson, in a graphic diagram, shows the division of state and federal powers, and in a plain but intelligible form presents the meaning of the constitution; the constitutional rights of English and American freemen, the development of these rights, expression of them in the federal constitution, the division of powers between executive, legislative and judicial, and between the federal government and the states; the changes in the constitution now proposed in the control of interstate commerce, trusts and corporations. In a short course of public lectures it is difficult to do more than present tendencies and sound conclusions, but these ends seem faithfully subserved.

Terrill, Bertha M. *Household Management.* Pp. 211. Price, $1.50. Chicago: American School of Home Economics.

This book is Volume VII of the Library of Home Economics. It takes high rank as being one of the best and certainly one of the most interestingly presented in its field. Cost-keeping is more fully treated than is usually done in similar books. A system for household accounts which is at once simple and efficient is presented. Dry facts are made interesting without being distorted, and are both up-to-date and scientific. The little volume will inspire the intelligent housekeeper as well as aid and inform her.

Thayer, J. S. *Legal Essays.* Pp. xvi, 402. Price, $3.50. Boston: Boston Book Company, 1908.

Like all posthumous collections, these essays lack the freshness given by the final touch of the author's hand. They range over a wide field of time and subject. Some were prepared for special non-professional meetings, others show the depth of research for which Professor Thayer's writings on constitutional law and evidence are so valuable. The best of the contributions of the book are the critical chapters on authorities and decisions. Among these are especially to be mentioned the essays on The Origin and Scope of the American Doctrine of Constitutional Law, Dicey's Law of the English Constitution, and on Bracton's Note-Book.

de Tourville, Henri. *The Growth of Modern Nations.* Translated from the French by M. G. Loch. Pp. viii, 508. Price, $3.50. New York: Longmans, Green & Company, 1907.

Contrary to one's first impression from glancing at its chapter headings, this volume is not in any sense a history of Western Europe. Rather it tells how far different our society is from the society of antiquity; how a certain human race became emancipated from that society of the past, and how when settled in one corner of Europe its society received a special form. The most powerful modern nations, it is declared, have gradually evolved not by public action, but by the free play of private initiative. From the germanic and gothic origins to the constitution of the present great nations, the author carefully points out the steps. The volume is very suggestive and contains some especially interesting chapters, notably three on feudalism, two on the communal movement in France, and one on the commerce of the middle ages. The last chapter, "The Foundation of the United States," appears to be one of the least important and least original; of its seventeen pages about six are quoted from Nolte's "Histoire des Etats Unis," the only authority cited in that chapter. A number of errors, typographical or otherwise, are to be noted, among them Roger Williams spelled William and Medford (Massachusetts) spelled Medfort.

Tyler, Lyon Gardiner. *Narratives of Early Virginia, 1606-1625.* Pp. xiv, 478. Price, $3.00. New York: Charles Scribner's Sons, 1907.

This volume of reprints, by President Tyler, of the College of William and Mary, on "Original Narratives of Early Virginia, 1606-1625," is one of the many evidences of the great interest students of history are taking in the colonial period. The book reproduces "Observations," by Master George Percy, 1607; this is followed by "A True Relation," by Captain John Smith, 1608; after which follows Smith's lengthy "Description of Virginia and Proceedings of the Colonie" (first printed in 1612). It includes also Book IV of the "Generall Historie of Virginia," written by Captain Smith in 1624. Among the minor historical documents given are the "Proceedings of the Virginia Assembly, 1619," the "Tragical Relation of the Virginia Assembly, 1624," and the "Discourse of the Old Company, 1625." Each original narrative is prefaced by an introduction in which President Tyler gives a brief historical statement regarding the document.

Voorhees, Edward B. *Forage Crops.* Pp. xiii, 384. New York: Macmillan Company, 1907.

The author puts into his book the knowledge and experience accumulated in many years of active service as director of the New Jersey experiment stations. Brief and practical farming suggestions are given that are helpful in growing and use of forage crops. Special attention is given to "soiling" and the management of crops most suited. A complete soiling schedule, supplying green forage for six months, is tabulated, and methods for the improvement of grain farming rotations are discussed. Tables of analyses and digestion co-efficients comprise the appendix. The work is illustrated by sixty-three excellent half-tone cuts.

Washington, Booker T. *The Negro in Business.* Pp. 379. Price, $1.50. Chicago: Herkel, Jenkins & Co., 1907.

One of the great difficulties in the way of understanding the trend of things among the negroes is the fact that the white man gets his impression of the race from the mass rather than from the individuals who have risen above it. This volume, by Dr. Washington, telling what various negroes of the country have succeeded in doing, will be a revelation to many whites and an inspiration to the negroes. Dr. Washington makes a strong appeal by describing various men and women. What he has to say should receive careful attention from all those who feel that the negro is doomed to inevitable failure.

Webster, Hutton. *Primitive Secret Societies.* Pp. xiii, 227. Price, $2.00. New York: The Macmillan Company, 1908.

It is hard for civilized man to realize that in all stages of human evolution there have been institutions designed to strengthen the group spirit, to preserve the old standards, to secure the influence of the elders. Dr. Webster has done all students of social institutions a service by collecting and interpreting so much evidence to show the significance and development of the rites by which the boy becomes a citizen with the responsibilities of the adult. He also describes the training of the novice, the rise and decline of secret societies, magical fraternities and the like. The author shows that these institutions have been world wide; that they have arisen to meet social needs; that they decline when advancing social organization produces better methods of social contact.

Wells, H. G. *New Worlds for Old.* Pp. 333. Price, $1.50. New York: Macmillan Co., 1908.
Reserved for later notice.

White, Edward (Ed.). *Pittsburg the Powerful.* Pp. 104. Price, $1.00, Pittsburg: Industry Publishing Co., 1908.

Who's Who in America. Edited by Albert Nelson Marquis. Pp. xxxii, 2400. Price, $4.00. Chicago: A. N. Marquis & Co., 1908.
Contains 16,395 names and sketches, 2,057 of which have not appeared in any previous edition. In addition are also references to sketches in previous editions, making available for reference over 20,700 personal sketches of prominent Americans now living, or who have passed away since the first edition of "Who's Who in America" was issued in 1899. The geographical index to the present edition is an entirely new feature. It groups by states, cities and post-office address all the names in the book, making it easy to find quickly the names for any particular station or locality.

Wood, H. A. W. *Money Hunger.* Pp. 144. New York: G. P. Putnam's Sons, 1908.
Reserved for later notice.

REVIEWS.

Cromer, The Earl of. *Modern Egypt.* Two vols. Pp. xlii, 1194. Price, $3.00 each. New York: Macmillan Company, 1908.
Twenty-eight years of service is the background from which the Earl of Cromer writes the story of modern Egypt. The connection of the distinguished pro-consul with the regeneration of Egypt has been so intimate that the book might easily have become largely a record of his own acts. In fact, the personal element rarely appears. Judgment is passed on the various events with singular lack of partisan bias. No attempt is made to excuse decisions which events later proved ill-advised. In estimates of the work done by others also there is shown the lack of favoritism, the readiness to give credit where it is due, which characterized all of the Earl of Cromer's administration. The detailed knowledge which every page shows witnesses how thoroughly the author was of Egypt as well as in Egypt. The subject matter discussed divides itself into three parts, each with a different interest. The first three hundred and thirty pages introduce us to the government on the verge of bankruptcy because of continued misrule. An extended review is given of the attempts to solve the problem of regen-

eration by international action—a means which the author points out is excellent in theory, but impotent in practice. Finally, events bring the assumption of undivided responsibility by England just as the revolt in the Soudan threatens to plunge Egypt itself back into barbarism.

This second part, treating of the loss and recovery of the Soudan, will prove the most interesting portion of the volumes to those who enjoy the story of battles and heroic deeds done in the face of great odds. The chapters bring out clearly the mistakes of policy and the needless sacrifice of life they necessitated.

The third portion, covering the last four hundred and fifty pages, is the part of greatest interest to the student of world politics and the problems of colonization in the tropics. It is the story of what has been done under English supervision. An analysis of the various elements composing the Egyptian "nation" shows none of the unity necessary for the foundation of a stable state. Race, religion, education, tradition—all split up the local society so that the word Egyptian becomes inclusive of various elements in reality incompatible. On this basis has been built that peculiar, almost anomalous structure, the Egyptian government, in which the Sultan is sovereign, the Khedive rules in form and the English consul-general in fact. After reviewing the numerous paradoxes involved in the governmental structure we are shown what can be done in spite of the clumsy machinery provided for the work.

The reforms under English influence touch every branch of Egyptian life. The gradual abolition of forced labor, the uprooting of official corruption, the disappearance of torture in tax collecting, improvements in irrigation and the army, the establishment of impartial courts, good schools, and a sound system of finance—these are the most important of the accomplishments of the English administration.

In all this the policy—when finally a policy was developed—was to insist on good government first of all. The best school for self-government is the example of self-government. The English have never tried to guarantee to the Egyptians "the divine right to misrule themselves." It is too soon to prophesy when Egyptian self-government may come. Ignorance, prejudice and the century-long tyranny of the upper classes at present unfit the fellaheen for government on western models. To give Egypt over to the Egyptians now would be to sacrifice all that has been accomplished. It would mean the recurrence of the anarchy which obtained before the interference by England and France. Education, training in the local governments and above all the help of sympathetic Europeans—these are the things of which the Egyptian peasant stands in greatest need.

Earl Cromer's volumes are at once thorough, scholarly and sympathetic. They are equally as far from discourses on theoretical rights as they are from the "blood and iron" politics too often practiced toward the weaker peoples.

CHESTER LLOYD JONES.

University of Pennsylvania.

Curtis, Natalie (Ed.). *The Indians' Book.* Pp. xxx, 573. Price, $7.50. New York: Harper & Bros., 1907.

A more beautifully typed or more sympathetically phrased presentation of Indian folklore than this is not to be found. The Indian tells his own story—songs, tales, cover design and title page are all his. Miss Curtis modestly disclaims any originality in her work, but declares that her part "has been the collecting, editing and arranging of the Indians' contributions." No one who reads the book, however, can but be convinced that this work has involved earnest study, enthusiasm, and an almost unmeasured taking of pains.

An unusually successful attempt is made to present not only the *words* of the folk songs, but also the music. Each tribe has the text of its leading songs presented with the peculiar harmonies to which they belong. The illustrations also are well done. Many of them are color reproductions of work done on baskets, parfleches, cradle boards, and tepees. Each of the songs and stories is accompanied by an explanatory paragraph, giving its proper setting in the life of the tribe by which it is used. The subjects treated range through the whole gamut of savage life from the lullaby to the ghost dance—from the song of the Cheyenne as he leaves the bodies of his slain enemies:

> "Ho ye! Hear ye! Come ye! Feast ye! O wolves!
> Feast, be ye merry, yo ho! gather at the dawn!"

To the prayer of thankfulness sung by the old men from the hilltops:

> "He our Father,
> He hath shown His mercy unto me.
> In peace I walk the straight road."

Not less interesting than the musical reproductions are the folktales proper, telling of the origin of the world, the granting of the gift of corn, the access to heaven, the origin of the totem, the traditions of the tribes concerning their own beginnings. There are few, if any, contributions to the literature of Indian folklore more valuable than this, and certainly none in which the editor has brought to the work a more intimate understanding.

CHESTER LLOYD JONES.

University of Pennsylvania.

Defebaugh, James E. (Ed.). *History of the Lumber Industry of America.* Two vols. Pp. xxvi, 1214. Price, $5.00. Chicago: American Lumberman.

The two volumes, by Mr. J. E. Defebaugh contain the most detailed and exhaustive information about the lumber industry of America thus far published. From lumbermen, lumber exchanges, state forestry departments, the national forest service, newspapers and journals, census and trade reports, the author has collected the data which tell the history of one of America's greatest industries.

In the first volume a history of the forest resources of the United States is given, showing how the industry has gradually moved westward and southward from the colonial forests of the North Atlantic. The public land policy is detailed; how tariff legislation has become a factor; how the lumber industry has grown from infancy to an industry embracing a capital of six hundred and twelve million dollars; how it has for almost three centuries been a factor in the foreign trade of America.

It is to be noted, however, that the great proportion of the two volumes deals with the lumber industry in two selected regions. Almost one-half of volume one deals with Eastern Canada, and all of the second volume deals with the white pine region of New England, Pennsylvania and New York. Step by step the history of the North Atlantic white pine industry is traced from colonial New England and New York to the present time, when only the remnants of those great resources remain. The forests of the South, the Great Lakes and the Pacific Coast are described only in the general chapters on the lumber industry as a whole, and are doubtless reserved for detailed analysis in a future volume.

G. G. Huebner.

University of Pennsylvania.

Enock, C. Reginald. *The Andes and the Amazon.* Pp. xiv, 379. Price, $5.00. New York: Scribner's Sons, Importers, 1907.

Peru, for many years dominated by ruinous political methods, militarism and clericalism, has remained in a state of obscurity and undevelopment, in spite of its diversified climate and its great but dormant gold, silver, and copper mines and other mineral and vegetable wealth. This economic stagnation is fast disappearing, and now the crying needs of the country are capital and labor. More highways and railroads should be built, so that commerce may be extended. The vivid and interesting descriptions here presented of actual conditions existing in Peru give us a new appreciation of the rare possibilities of the country.

The scientific learning of the Incas as shown in the construction of their buildings, roads, and bridges, their use of minerals and their artistic and astronomical knowldge, is shown to be of no mean order. Mr. Enock remarks that it is a pity that the Anglo-Saxons were not their "conquisators" rather than the Spaniards, for there is but little doubt that the Inca civilization would have left something which might have been "developed and perpetuated" by a more practical race had the right methods been employed. Even to-day many formerly prolific mines are lying in a state of ruin and decay because of the lack of some enterprising capitalist to conduct their operation, and it is safe to say that some time will still elapse before Peru has surmounted the difficulties and defects which have hindered her on her road to progress.

In the chapters on the life and characteristics of the Peruvians the healthy spirit of enterprise arising in the younger generation, in comparison with the lack of energy of the older is described. If this condition continues to grow, and if aid is given by foreign capitalists, Peru will soon be able to assume the position provided for her by nature. Mr. Enock's criticism of the various institutions and his comments on South American relations are essentially different from those of a citizen of the United States, nevertheless they do not detract from the utility of the book which clearly describes the characteristics of the country and people "thirsty for progress, and extending their hand of welcome to the foreigner who seeks their shores."

HENRY RALPH RINGE.

Philadelphia.

Hawley, Frederick Barnard. *Enterprise and the Productive Process.* Pp. xii, 462. Price, $1.50. New York: G. P. Putnam's Sons, 1907.

The author sets before himself three problems: to define the precise functions of the entrepreneur or "enterpriser" to mark off the exact scope of economics, and to set forth a method of testing economic definitions. The significance of the enterpriser as one who appropriates opportunities and organizes the factors of production for the exploitation of such opportunities is well brought out and discussed, but agreement with some of the conclusions drawn necessitates an acceptance of the author's risk theory of profits. In an interesting discussion of method Mr. Hawley endeavors to exalt the deductive process to the exclusion of the inductive. This book narrows the scope of economics in a way from which many will dissent. In making a three-fold division into individual, social, and economic activities the author writes: "Individual actions are those performed by an independent person for a personal purpose; social actions, those performed in combination with others for indefinite or impersonal purposes; and economic, those performed in combination with others with a definite personal purpose," thus reducing economics to "the science of industrial income." Such a conception of the science may be acceptable to advocates of "business economy," but certainly not to those who believe with Roscher that economics has ceased to be a science of wealth and has become a science of man.

There are many good things in this interesting book, as, for example, Mr. Hawley's suggestion of the importance of the marginal saver, his public-spirited application of the ethical questions as opposed to the financial questions involved in public ownership, and his hearty endorsement of the labor union as "the laborer's university," but an acquiescence in the author's general conclusions necessitates an acceptance of his risk theory of profits, of his perhaps too pronouncedly entrepreneur point of view, and of his extremely restricted conception of the scope of economics.

RAYMOND V. PHELAN.

University of Minnesota.

Howe, Frederic C. *The British City: The Beginnings of Democracy.* Pp. xvi, 370. Price, $1.50. New York: Charles Scribner's Sons, 1907.

This work of Dr. Howe's supplements his admirable volume on "The City, the Hope of Democracy," which appeared in 1906. In this new volume he has given a clear picture of the activities of the British cities, and has laid special stress on the results accomplished in Glasgow and London. The material presented is well co-ordinated. As one reads the record of achievement of the British cities one cannot help but feel that when the populations of American cities once realize the possibilities of communal action we will enter upon a period of municipal activity no less fruitful and possibly more so.

Throughout his work Dr. Howe has preserved a due sense of proportion. He has not exaggerated the efficiency of city government in Great Britain and has, in fact, been careful to point out its defects. Nevertheless the results actually accomplished can well serve as a lesson to American municipalities. The work is characterized by a tone of optimism and faith in the future, which stands in contrast with much of our literature on municipal affairs. It is in books such as these that the younger men of the country can draw inspiration for renewed effort in the improvement of municipal conditions.

L. S. Rowe.

University of Pennsylvania.

Ingram, John K., LL.D. *A History of Political Economy.* Pp. 250. Price, $1.50. New York: Macmillan Company, 1907.

In this revised edition of his "History of Political Economy," the author devotes much of his attention to the modern periods of thought. After discussing in his first and second chapters, Ancient Times and the Middle Ages, he takes up the modern situation, the first phase of which is the breaking up of the absolute control of the Church. So long as this control was maintained, economic forces could not act freely and a system of political economy was well nigh impossible. When the Church control was broken, modern manufacturing and commerce began. In the second modern phase, the mercantilists' doctrine was the prevailing basis of economic thought. Underlying this doctrine was the idea that specie should be kept in the country and that the nation which was able to secure the most specie was the most prosperous country. This system was succeeded by the system of natural liberty, in which may also be traced two distinct stages. First, a more complete separation of banking from commerce, and second, the great development of the use of machinery in production.

The author then takes up the steps necessary to renovate the science of political economy. First, scientific data only must be accepted as a basis for deductions. Up to the present time too much of the data used by political economists has been unscientifically collected by lawyers, men of letters and others unfamiliar with the collection of facts. Second, economics must be recognized as a branch of the larger science, sociology, and as such must keep a distinct position. Third, the laissez-faire doctrine has gone for good, and what Spencer called the "new slavery," or government interference, has come to stay. The author will not find unanimity of opinion on his statement that the science of economics must be regarded as only a branch of sociology, but on all hands he will find support in his demand for a scientific basis in facts for economic theories.

Scott Nearing.

University of Pennsylvania.

Meyer, Hugo Richard. *The British State Telegraphs.* Pp. xvii, 408. Price, $1.50. New York: Macmillan Company, 1907.

The present volume is one of a series of five by the author, devoted to a discussion of municipal and national experiments in the field of industry. The book is divided into two distinct parts, Chapters II to VI outline the inception and history of the movement which culminated in the purchase of the telegraph lines by the British Government in 1870. and Chapters VI to XXIII give an account of their management with especial emphasis upon "the problem of a large body of civil servants in a Democracy."

The author frankly admits that he is actuated by a motive in presenting this work, viz.: to warn the American public against the present tendency to expand the functions of government. In order to substantiate this view a dark portrayal of the political and class influences exerted by the presence of a large body of public servants affords the main evidence.

It is shown that by the enfranchisement of the civil servants, in 1868, the basis of this political influence was laid, which was zealously employed in later years to advance wages and to secure other favors. The author insists that incapacity, mismanagement and political intrigue have characterized the service. Civil service unions have arisen for the purpose of concentrating and making effective this large vote which has been used for selfish ends and not for the promotion of public policies. A book with a plea so special suggests a biased view, and although many facts have been marshalled in support of the main contentions, still a doubt is raised as to whether all the truth has been presented. Too much emphasis may have been placed upon rates as a test of the success of the British venture. It is highly probable that if the evidence had been given its proper weight the dark picture here presented might prove less sombre.

Samuel E. Sparling.

University of Wisconsin.

Municipal and Private Operation of Public Utilities: Report of the National Civic Federation Commission on Public Ownership and Operation. Three volumes: Part I, Volume I, General Conclusions and Reports; Part II, Volume I, Reports of Experts—United States; Part II, Volume II, Reports of Experts—United Kingdom. Pp. xxxii. 2447. New York: National Civic Federation, 1907.

This large and valuable collection of reports on public utilities by various experts is a unique contribution to the literature on municipal government. Its purpose is declared to be "to determine impartially and scientifically the relative merits of private and public ownership and operation of public utilities." There has never before been so serious an attempt in the United States to collect systematically the material necessary for such a judgment. The success of the investigation presented is determined by the manner in which it was carried on. Every effort was made to keep a judicial attitude, and to avoid special pleading. Nevertheless, the evidence, or rather the conclusions based upon the evidence, again and again show the desire upon the part of some of the contributors to prove a case. In numerous instances the authors, in commenting upon arguments advanced in the various articles by other contributors, point out that the interpretation given to various facts is erroneous, or that the facts selected for comparison are not typical of general conditions. This is especially true of the first volume, in which an attempt is made to summarize the detailed studies presented in the last two. The impression left upon the mind of the reader is often that produced by the arguments of counsel, rather than that by the opinion of the judge. The compilation is therefore chiefly valuable—and in this way it renders the student an inestimable service—as a storehouse of *facts,* but the duty of a critical analysis of the facts and their relative significance must still be borne by the student who uses the work as a reference.

This criticism applies, as noted above, especially to the first volume—the one interpreting the material collected. The collections of data presented in the final volumes are impartial, and so far as they could be made complete, entirely satisfactory. The branches of each subject chosen for investigation were carefully sketched beforehand, and there is, therefore, a commendable uniformity in the information on the various utilities examined. Specific questions were prepared in advance to cover every fact which seemed important. The experts in these prelminary investigations were to report the facts in accordance with these prescribed schedules, and were not expected even to tabulate the results, leaving this work entirely to the members of the commission or to duly appointed committees. Except where answers to the various inquiries were for various reasons unavailable, comparisons can therefore be made by the student with ease and with comparative assurance that the inferences drawn are not to be overthrown by neglected factors.

The commission was fortunate in the decision to limit the investigation to the more important public utilities, thus avoiding confusing detail and too summary treatment. The reports cover gas, electric lighting and power, street railways and water, whether the plants are privately or publicly owned. The third volume is devoted to a presentation of the conditions surrounding the operation of public utilities in England, which was selected from among foreign countries because it was felt that on account of the similarity of institutions a comparison of results achieved there with those in the United States would be most instructive.

These three volumes as a whole present the most valuable compilation of statistics concerning municipal affairs yet published in the United States. Whatever limitations are present are in large degree unavoidable, for the complexity of the subjects to be treated makes it unusually difficult, if not impossible, to draw from the facts a conclusion that will be convincing to all. An excellent index, covering, in the three volumes, forty-eight closely-printed pages, places the material within immediate reach.

Chester Lloyd Jones.

University of Pennsylvania.

ANNUAL REPORT FOR 1907 OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

The annual business meeting of the Academy was held on Monday, January 20, 1908. The terms of Professor Patten, Professor Johnson and Mr. Clinton Rogers Woodruff as directors having expired, they were re-elected for the ensuing three years.

From the report of the Board of Directors the following extracts are reproduced to show the work and growth of the Academy during the year:

Publications.

During the year 1907 the following special volumes appeared:

January—Child Labor.
March—Railway and Traffic Problems.
May—Tariffs, Reciprocity and Foreign Trade.
July—American Colonial Policy and Administration.
September—Bonds as Investment Securities.
November—Social Work of the Church.

In addition, there were issued during 1907 three supplements to The Annals, as follows:

January—Child Labor Legislation, compiled by Miss Josephine C. Goldmark.
March—Our State Constitutions, James Q. Dealey.
September—Impersonal Taxation, Charles H. Swan.

Meetings

During the year the Academy held the following meetings:

January 5, 1907—"Third Pan-American Conference."
  Professor Paul S. Reinsch.
  Dr. George W. Scott.
  Honorable William C. Fox.
  Honorable Tulio Larrinaga.

February 15, 1907—"The Physical Welfare of School Children."
  William A. Stecher.
  Dr. Richard C. Cabot.
  Dr. William H. Allen.
  Dr. Martin G. Brumbaugh.

March 18, 1907—"The Present Crisis in Russia."
Nicholas W. Tchaykovsky.
Alexis Aladyin.
Rev. Alexander Francis.

April 19-20, 1907—Eleventh Annual Meeting (four sessions)—"American Colonial Policy and Administration."
First Session—Professor James T. Young.
Honorable Henry C. Ide.
Professor J. W. Jenks.
Captain Frank McIntyre.
Dr. Martin G. Brumbaugh.

Second Session—Honorable Charles Emory Smith.
Right Honorable James Bryce.
Honorable Albert J. Beveridge.

Third Session—Professor Carl Kelsey.
Honorable David P. Barrows.
Thomas B. Lawler.
Professor E. W. Kemmerer.
E. W. Lord.
Dr. Daniel Folkmar.

Fourth Session—Professor Samuel McCune Lindsay.
Professor Jacob H. Hollander.
Honorable Paul Charlton.
Honorable Herbert Parsons.
Major Louis L. Seaman.

December 2, 1907—"The Lessons of the Financial Crisis."
Honorable Frank A. Vanderlip.
William A. Nash.
Honorable William B. Ridgely.
Jacob H. Schiff.
Isaac N. Seligman.
Honorable Charles H. Treat.

Membership

The membership of the Academy on the 31st of December, 1907, including subscribers, was 3,884. Of these 921 are residents of Philadelphia, 2,798 residents of the United States outside of Philadelphia, and 165 are foreign members. Compared with the membership on the 31st of December, 1906, we find that in the Philadelphia membership there is a gain of 41; in the membership in the United States outside of Philadelphia 146; and in the foreign membership a loss of 11; or a total gain of 176.

During the year the Academy has lost through death 37 of its members, 2 of whom were life members.

The treasurer's report is appended:

Summary of Income and Expenditures for the year ended December 31, 1907.

Cash on hand January 1, 1907		$4,911.13
INCOME.		
Annual membership fees	$15,413.81	
Life memberships	700.00	
Special contributions	1,390.34	
Subscriptions to publications and sales thereof	4,587.20	
Income from investments	1,620.00	
Interest on deposits	79.67	
		23,791.02
		$28,702.15
EXPENDITURES.		
Clerical assistance	$3,469.96	
Printing, stationery and postage in connection with publication of ANNALS and with general correspondence	13,817.95	
Expenses of meetings	1,689.07	
	$18,976.98	
Investments purchased	4,942.42	
		23,919.40
Cash on hand December 31, 1907		$4,782.75

INDEX OF NAMES

ABBREVIATIONS:—In the index the following abbreviations have been used: *pap.*, principal paper by the person named; *b.*, review of book of which the person named is the author; *r.*, review by the person named; *com.*, communication by the person named.

Abbot, H. L., 12-35, *pap.*
Abbott, 225
Abbott, A. C., 484, 486
Aimes, H. H. S., 263, 495, *b.*
Aladyin, A., 739
Aldrich, N. W., 443
Allen, S. E., 484, 489
Allen, W. H., 738
Allin, C. D., 707, *b.*
Althouse, C. O., 164-77, *pap.*
Altimira, R., 289
Ames, H. V., 291-3, *r.*, 298-9, *r.*
Andersen, N. P., 495
Anne, Queen, 291
Arango, R. M., 16, 22, 28
Aristotle, 287, 288
Arnold, B. J., 621, 623
Ashford, W. H. R., 243, 244
Ashley, P., 277
Askenazy, S., 289
Astor, J. J., 194, 196
Aucuy, M., 263, *b.*

Babeuf, F. N., 711
Bading, G. A., 484, 489
Bagehot, W., 382
Baldwin, J. M., 513, *b.*
Bancroft, W. A., 701-2, *com.*
Bankhead, J. H., 48
Barker, E., 287, *b.*
Barker, J. E., 708
Barnard, J. L., 263, *b.*, 521 *r.*
Barnave, A. P. J. M., 711
Barnett, G. E., 264
Barrett, E. E., 717
Barrows, D. P., 739
Bartlett, D. W., 495, *b.*
Barton, J. L., 495, *b.*
Bassett, E. M., 571
Bassett, W., 83
Bastiat, 498
Baxter, R., 417
Bazaine, M., 264, 496, *b.*
de Beaumarchias, P. A. C., 532
Beazley, C. R., 264, 496, *b.*
Beer, G. L., 514, *b.*
Belcher, E., 197
Belcher, J., 292
Bellamy, E., 377
Bemis, E. W., 527-8, *r.*, 580
Bennian, 289
Benton, E. J., 708
Berens, L. H., 264, *b.*
Bergen, F., 659-70, *pap.*
Berglund, A., 515, *b.*
Beveridge, A. J., 739
Beveridge, W. H., 285
Bezold, 526
Bierd, 32
Bierly, W. R., 264
Bigelow, J., 497
Bishop, A. L., 497
Bishop, J. B., 27
Blackburn, J. C. S., 26, 27
Bogart, E. L., 497, *b.*
von Böhm-Bawerk, E., 502
Boissel, 711
Boissevain, G. M., 470
Bolles, A. S., 316
Bonaparte, N., 267, 381, 498
Bond, B., Jr., 264, *b.*
Booth, C., 528
Bornhak, C., 470, 476
Bourgeois, 288, 289
Bourne, E. W., 289
Bowan, R. H., 242
Bowdoin, J., 83
Bowering, 289
Boyd, C. E., 265, *b.*
Boynton, F. D., 265
de Bracton, H., 723
Bradshaw, G., 229, 244
Brandeis, L. D., 599
Brewer, D. J., 626, 664
Brewster, W. N., 265, *b.*
Brindley, J., 230, 235
Brisco, N. A., 266, *b.*
Broadhead, 292
Brooks, J., 593
Broughton, Lieut., 193
Brown, N., 439
Brown, S., 497, *b.*
Browne, H. A., 267, 498, *b.*
Bruère, H., 535-51, *pap.*
Brumbaugh, M. G., 738, 739
Bryan, W. J., 661
Bryce, J., 739
Bubendey, 261
Buckland, T. A., 484, 487
Bullock, C. J., 267, *b.*, 498, *b.*
Bunn, C. O., 708, *b.*
Bunn, W. C., 708, *b.*
Burke, E., 532
Burr, A., 293
Burr, E., 151
Burton, T. E., 48, 151
Busse, F. A., 625
Butler, N. M., 499, *b.*

Cabot, R. C., 738
Calvert, A. F., 268, *b.*, 708
Calvert, T. H., 269, 499, *b.*
Calvin, J., 527
Campanella, T., 711
Campbell, R. J., 499, *b.*
Carnegie, A., 290
Case, L., 95
Casson, H. N., 269, 290, *b.*
Chandler, S. E., 709, *b.*
Chapin, C. V., 484, 490

Index of Names

Charles V, 526
Charlton, P., 739
Chatterton-Hill, G., 269, *b.*
Cheyney, E. P., 277, 523-5, *r.*
Church, G. E., 500
Cincinnatus, L. Q., 357
Clapham, J. H., 289
Clark, J. B., 515, *b.*
Clark, W., 196, 718
Clarke, C., 708
Cleveland, F. A., 420-47, ***pap.***, **708**
Cleveland, G., 316
Clinton, De W., 117, 293, 294
Clinton, G., 293
Codd, G. P., 583, 584
Cotlin, G. M., 407
Cohn, G., 261
Collins, L. C., 27
Colson, C., 500
Commons, J. R., 270, *b.*, 516 *b.*
Conyngton, T., 270
Cooley, L. E., 621
Cooley, M. E., 580
Coote, 711
Cords, Th. M., 261
Cortelyou, G. B., 301, 327, 368, 371, 423
Corthell, E. L., 84
Cotes, E., 270
Couder, 228, 229, 237
Coulson, H. J. W., 244
Craig, N. B., 500 *b.*
Crane, F., 99
Crane, R. T., 500
Cranmer, T., 527
Crawley, A. E., 285
Creanga, G. D., 270
Cromer, Earl of, 725, *b.*
Cromwell, O., 264
Cronbach, E., 270
Crowell, H. H., 588
Culberson, C. A., 427, 439, 441
Culin, S., 268
Curtis, C., 439
Curtis, Natalie, 727, *b.*
Czar of Russia, 709

Davenport, H. J., 708
Davidson, T., 505
Davis, A. P., 39, 203-18, ***pap.***
Davis, Jefferson, 520
Davis, Joseph, 520
Davis, R. H., 500, *b.*
Dawson, W. J., 708, ***b.***
Day, C., 270, 517, *b.*
Dealey, J. Q., 738
Defebaugh, J. E., 727, *b.*
Densmore, E., 501, *b.*
Deschamps, 263
De Vries, 269
Dewey, D. R., 708
Dicey, A. V., 723
Dick, S., 501, *b.*
Dodd, W. F., 671-88, ***pap.***
Dow, A., 589
Dow, E. W., 270, *b.*
Dowd, J., 518, *b.*
Doyle, J. A., 291, *b.*
Drost, D., 470
Dunbar, 324
Dunmore, W. T., 708, *b.*
Dunne, E. F., 620, 624, 625, 694
Dunning, W. A., 270
Du Pont, A. B., 621
Durán, F. M., 27
Durham, R. L., 709
Durland, K., 519, *b.*

Eads, Capt., 84
Earle, G. H., Jr., 355-60, ***pap.***
Eaton, J., 520, *b.*
Eddy, Mrs. M. B. G., 719
Edwards, A. M., 521
El Gran Capitan, 269
Elliott, J. M., 460-2, ***pap.***
Ellis, E. C., 182
Ellison, J. F., 144
Engels, F., 279, 505, 528
Enock, C. R., 728, *b.*
Erasmus, D., 526
Eustis, J. E., 571

Fairlie, J. A., 117-25, ***pap.***, **586**, **709**
Fastrez, A., 501
Fessenden, F., 521, *b.*
Fessenden, W. P., 521, 522
Fewkes, J. W., 268
Finley, W. W., 51
Fish, C. R., 532-3, *r.*
Fisher, H. A. L., 523, *b.*
Fisher, I., 501, *b.*
Fisher, W., 622, 624
Fisk, G. M., 522, *b.*
Flagler, C. A. F., 73-80, ***pap.***
Fleming, W. L., 221-2, ***r.***, **520**, ***r.***, 521-2, *r.*
Folkmar, D., 739
Forbes, U. A., 228-45, ***pap.***, 243, 244
Forbes-Lindsay, C. H., 271, *b.*
Ford, H. J., 531
Foreman, M. J., 639-48, ***pap.***
Forman, B. R., 634
Fornes, C. V., 444
Forrest, J. D., 271, *b.*
Foster, J. G., 84, 99
Foulke, W. D., 272, *b.*
Fowler, C. N., 324, 406, 407, 427, **439**
Fox, W. C., 738
Frame, A. J., 377-97, ***pap.***
Francis, A., 739
Franklin, B., 356, 532
Fraser, J. F., 709, *b.*
Frederick the Great, 532
Freeman, W. G., 709, ***b.***
Frick, H. C., 290
Friedman, H. G., 273
Friedrich, E., 710
Frissell, A. S., 463-9, ***pap.***
Frizell, J. P., 15
Frye, W. P., 151
Fynn, A. J., 710, *b.*

Gage, L. J., 327, 421, 454-9, ***pap.***
Gaillard, D. Du B., 26, 31
Galileo, 285
Gallatin, A., 94
Gallichan, W. M., 268, ***b.***
Garcia, G., 273, 502
Gartside, 719
Gaskill, Mrs., 278
Gay, 277
Geddes, P., 285
George, H., 264, 665
Gilbert, J. H., 273
Gillette, C. E., 74
Goddard, P. E., 502
Goethals, G. W., 26, 35
Goldmark, Josephine C., **738**
Goler, G. W., 484, 491
Gomme, G. L., 711 *b.*
Gooch, 289
Goodrich, A. N., 273
Gore, T. P., 439

Index of Names

Gorgas, W. C., 18, ***et seq.***
Grangez, E., 261
Grant, U. S., 316, 520
Gray, Capt., 193
Gray, J. C., 593, 626
Greene, T., 286
Greenleaf, J. L., 169
Griffis, W. E., 273, *b.*
Griffith, E. C., 502, *b.*
Grimshaw, B., 711
Grosscup, P. S., 626
Grover, N. C., 713, *b.*
Gudger, H. A., 27
Guthrie, W. B., 711, *b.*
Gutzeit, P., 503

Hadley, A., 523, *b.*
Haeck, 263
Haines, H. S., 274
Hainisch, M., 274
Hale, A., 503, *b.*
Hale, N., 593
Hall, B., 274, *b.*
Hall, H. M., 503
Hall, J., 141
Hall, P. M., 484, 490
Hally, P. J. M., 577
Hamilton, Alexander, 320, 356
Hamilton, Andrew, 292
Hamilton, J. L., 390
Hanna, H. S., 503
Hansborough, H. C., 444
Harahan, J. T., 51
Harcourt, L. F. V., 228, 229, 244
Harding, C., 27
Harlan, J. M., 298
Harriman, E. H., 193
Hart, 708, 716
Hart, G., 274, *b.*
Harwood, W. S., 712
Hattersley, C. W., 712, *b.*
Haverfield, 711
Hawley, F. B., 729, *b.*
Hazen, A., 275, *b.*
Hemlup, Maria R., 713
Henderson, C. R., 713, *b.*
Henry VII, 523, 524
Henry VIII, 523, 524
Henry, Prince, 496
Henry, P., 503
Herbertson, A. J., 503
Herbertson, F. D., 503
Hernandez, A. M., 504
Herrick, M. T., 308-25, *pap.*
Herschel, C., 78, 84
Heyburn, W. B., 441
Higginson, S., 504
Higginson, T. W., 504, *b.*
Hill, J. J., 51, 162
Hodges, H. F., 27
Hoffman, G. M., 27
Holland, C., 713, *b.*
Hollander, J. H., 739
Holman, F. V., 275, *b.*
Holmes, O. W., 575
Holt, H., 276, *b.*
Hone, N. J., 276, *b.*
Hotchkiss, W. E., 619-29, *pap.*
Howe, F. C., 277, 729, *b.*
Hoyt, J. C., 713 *b.*
Hrdlicka, A., 504
Hudson, H., 193
Huebner, G. G., 727-8, *r.*
Hueffner, F. M., 277, *b.*
Hughes, C. E., 367, 467, 567, 657
Hulbert, A. B., 278, 504, *b.*
Hull, W. H., 713, *b.*
Hume, D., 285
Humphreys, 225
Hunt, William, 523, *b.*, 714
Huntington, E., 504
Hutchinson, A. L., 278, *b.*
Von Hutton, 526

Ide, H. C., 739
Ingram, J. K., 730, *b.*
Ivins, W. M., 565, 572

Jackson, A., 314, 369
Jacquart, C., 505, *b.*
Jadwin, E., 27
Jannsson, 526
Jay, J., 265
Jeans, S., 244
Jefferson, T., 196, 356, 504, 718
Jenkins, E. F., 484, 492
Jenks, J. W., 739
Jevons, W. S., 393, 498
Johnson, E. R., 261, 514-15, *r.*, 517-18, *r.*, 738
Johnson, J. F., 317
Johnson, T. L., 576
Jones, C. H., 484, 487
Jones, C. L., 102-16, *pap.*, 287-8 *r.*, 295-6, *r.*, 470, 482, 525-6, *r.*, 529-30, *r.*, 725-6, *r.*, 727, *r.*, 731-2, *r.*
Jones, L. M., 178-88, *pap.*
Jordan, D. S., 278, *b.*

Keifer, J. W., 427
Kellogg, V. L., 714
Kelly, E., 714, *b.*
Kelsey, C., 518-19, *r.*, 519-20, *r.*, 531-2, *r.*, 739
Kemmerer, E. W., 714, *b.*, 739
Kenny, C. H., 505, *b.*
Kepler, J., 285
Kerr, C. H., 280
Kidd, B., 269
Kirkpatrick, F. A., 289
Kirkup, T., 279, *b.*
Knight, E. F., 505, *b.*
Knight, W., 505
Knoop, D., 719, *b.*
Knox, J. J., 386
Knox, P. C., 443
Kroeber, A. L., 279, 505
Kropotkin, Prince, 715, *b.*
Kurs, Major, 252

Labriola, A., 279, *b.*
Lafarque, P., 280, *b.*
Lafayette-Savay, N., 716
La Monte, R. R., 280 *b.*
Larrinaga, T., 738
Latané, J. H., 525, *b.*
Laurell, G., 470, 481
Law, J., 381
Lawler, T. B., 739
Lawson, W. R., 408, 409
Lea, H. C., 505
Lee, G. W., 280
Leijonancker, F. W., 480
Lemberger, H., 505, *b.*
Leopold, 501
Le Play, F., 528
Lewis, A. M., 716
Lewis, E. O., 600-11, *pap.*
Lewis, M., 196, 718
Liebknecht, W., 716
Liefmann, R., 505

Lincoln, A., 371, 520, 665
Lindsay, S. M., 739
Lindsay, T. M., 526, *b.*
Lingelbach, W. E., 288-90, *r.*, 526-7, *r.*
Linguet, S. N. H., 711
Lloyd, H. D., 716
Lloyd, S., 228, 229, 240, 244
Loch, M. G., 511, 723
Lockwood, D. W., 143
Long, S. H., 140, 141
Lord, E. W., 739
Lorenz, M. O., 297-8, *r.*
Lotz, W., 246-62, *pap.*, 261
Louis, Philippe, 289
Low, Seth, 617
Lucan, 269
Luetscher, G. D., 92-101, *pap.*
Luther, M., 526, 527

de Mably, G. B., 711
MacAfee, J. B., 695-700, *pap.*
Machin, T., 83, 99
Mackenzie, A., 48, 151
Macrosty, H. W., 281, *b.*
Madison, J., 1, 91, 503
Madison, Mrs. J., 522
Mahan, A. T., 716, *b.*
Maine, H., 508
Mallock, W. H., 716
Maltbie, M. R., 571
Mangold, G. B., 484, 516-17, *r.*
Mann, S. J., 244
Mansilla, L. V., 716
Manson, M., 223
Marquis, A. N., 725
Marx, 708, 716
Marx, K., 263, 279, 280, *b.*, 505, 716
Mary I, 526
Mayer, O., 262
McBain, H. L., 293, *b.*
McCarroll, W., 571
McCormick, F., 716
McCulloch, 336
McDonald, J. B., 562
McDougall, W., 285
McGee, W. J., 48
McIntyre, F., 739
McKenzie, F. A., 506
McLeod, H. D., 322
McLoughlin, Dr., 194
McLoughlin, J., 275, 276
Meitzen, A., 277
Merritt, A. T., 716, *b.*
Meyer, H. R., 281, 527, *b.*, 731, *b.*
Meyers, H. B., 717
Michler, Major, 197
Miller, E. I., 506
Miller, H. A., 707
Mills, A. L., 413-19, *pap.*
Miyakawa, M., 281, *b.*
Monroe, J., 91, 265
de Montessus, 13
Moore, J. H., 67-72, *pap.*
More, Louise B., 528, *b.*
More, T., 711
Morelly, 711
Morgan, J. P., 309
Morris, C., 282, 506, *b.*
Morris, R., 532
Munro, D. C., 282, 506, *b.*
Murphy, J. J., 612-18, *pap.*
Murray, A. M., 529, *b.*
Mussey, H. R., 295, *r.*, 296-7, *r.*

Nash, W. A., 361-6, *pap.*, 739
Neame, L. E., 282, *b.*
Nearing, S., 730, *r.*
Nelson, K., 439
Newell, F. H., 48
Newlands, F. G., 48-66, *pap.*
Nicholson, J. S., 290
Nietzsche, F., 717
Nolte, 723
Nordenstrahl, O., 470, 480
Nuttall, Z., 717

Odell, B. B., Jr., 121
Ortuzar, A., 530, *b.*
Osgood, E. I., 717, *b.*
Osgood, H. L., 282, 294, *b.*
O'Shea, M. V., 513, *r.*, 718
Otis, H., 83
Owen, R., 263
Owen, R. L., 439, 442, 443

Page, T. W., 277
Paris, A., 593, 594
Parloa, Maria, 282, *b.*
Parrish, R., 718, *b.*
Parsons, H., 739
Parsons, W. B., 81-91, *pap.*
Patten, S. N., 283, 738
Paul, the Deacon, 272
Paxson, F. L., 289
Peary, R. E., 283, 506, *b.*
Peel, R., 382
Penn, W., 292
Pennypacker, S. W., 603
Percy, G., 724
Perrin, J., 391
Peters, 255, 262
Phelan, R. V., 729, *r.*
Phillips, U. B., 718
Phillips, W. A., 289
Phipps, H., 290
Pinchot, G., 48, 219-27, *pap.*
Pingree, H. S., 576, 580, 584
Plato, 287, 288
Platt, T. C., 427
Plechanoff, G., 507
Polk, J. K., 719, 720
Pollock, H. M., 649-58, *pap.*
Pollard, A. F., 289
Poole, R. L., 523, *b.*
Poorman, C. L., 283, *b.*
Popplewell, F., 719, *b.*
Porter, D., 172
Poussin, W. T., 84
Powell, J. W., 197
Powell, L. P., 719, *b.*
Pratt, E. A., 283, 507, *b.*
Prescott, W., 593, 594
Proud, 292
Proudhon, P. J., 263
Prüsmann, 261

de Quesda, G., 283
Quincy, J., 593

Randolph, J., 141
von Ranke, L., 526
Ransdell, J. E., 36-47, *pap.*, 162
Raper, C. L., 528-9, *r.*
Raynor, I., 439, 443
Rees, A., 245
Reeves, J. S., 719, *b.*
Reid, G. A., 285
Reinsch, P. S., 738
Ricardo, D., 393
Richards, J. L., 593-9, *pap.*
Richards, R. C., 283, *b.*
Richmond, Mary E., 507

Index of Names

Ridgely, W. B., 326-34, *pap.*, 371, 425, 428, 739
Ringe, H. R., 728-9, *r.*
Rives, A. L., 84
Roberts, G. E., 345-54, *pap.*
Robinson, L. M., 703-6, *com.*
Robinson, M. H., 523, *r.*
Robinson, N., 594
Rollins, M., 507, *b.*
Roosevelt, T., 1-11, *pap.*, 26, *et seq.*, 48, *et seq.*, 121, 147, 278, 295, 333, 392, 402, 427
Root, E., 507, *b.*
Root, W. T., 293-4, *r.*
Roquenant, A., 508, *b.*
Roscher, W., 729
Ross, E. A., 284, 295, *b.*
Rothschild, Lord, 368
Rousseau, H. H., 26, 27
Rowe, L. S., 301, 530, *r.*, 531, *r.*, 729-30, *r.*
Rowntree, B. S., 528
Ruffner, E. H., 143
Ryan, T. F., 561, 564

de Saint-Just, C. A. J., 711
Salamond, J. W., 284, 508, *b.*
de Salis, H. R., 229, 240, 244
Sargent, A. J., 720, *b.*
Sauer, M. J. A., 239, 245
Savine, A., 525
Schäffer, Mrs. C., 497, 498
Schaffner, 708, 716
Schanz, G., 261
Scharling, W., 470, 479
Schatz, A., 508
Schiff, J. H., 372-6, *pap.*, 739
Schmoller, G., 277, 284
Schumacher, H., 262
Schuster, E. J., 284, 295, *b.*
Schwabe, 255, 261
Scott, G. W., 738
Scott, J. G., 720, *b.*
Scott, J. T., 508, *b.*
Scott, N. B., 439
Scott-Elliott, G. F., 721
Seaman, L. L., 739
Sears, C. B., 143
Seebohm, F., 711
Segre, C., 289
Seligman, I. N., 367-71, *pap.*, 739
Sellery, G. C., 282, 506, *b.*
Seneca, 269
Sever, W., 83
Sewall, S., 82
Seward, W. H., 520
Shaler, N. S., 225, 298
Shambaugh, B. F., 509
Shaw, A., 531, *b.*, 719, 721
Shaw, L. M., 327, 420, 421, 422, 423
Shepard, E. M., 614
Shonts, T. P., 26, 78
Shufeldt, R. W., 509, *b.*
Sibert, W. L., 26, *et seq.*, 39, 143
Siegfried, 368
Sikes, G. C., 689-94, *pap.*
Sinzheimer, H., 509
Small, A. W., 296, *b.*
Smiles, S., 245
Smith, A., 296, 297, 385, 393, 498
Smith, A. H., 284, 721, *b.*
Smith, C. E., 739
Smith, H. K., 48
Smith, J., 26, 27, 724
Smith, J. H., 509
Smith, S. G., 284, 297, *b.*
Smith, T., 82, 83
Smyth, M., 713
Snedden, D. S., 509, *b.*
Snyder, C., 284, *b.*, 510, *b.*
Socrates, 287
Spargo, J., 280, *b.*
Sparling, S. E., 731, *r.*
Speed, T., 285, 298, *b.*
Spencer, H., 730
Spooner, J. C., 26
Sprague, R. F., 510
Stécher, W. A., 738
Steere, C. A., 722
Steiner, B. C., 285, *b.*
Steiner, E. A., 510, *b.*
Stelzle, C., 510, *b.*
Stevens, A. C., 722, *b.*
Stevens, J. F., 26
Stevenson, D., 244
Stickle, H. W., 27
Stimson, F. J., 722, *b.*
Stokes, E. C., 660
Stone, W., 286
Stuyvesant, P., 292
Sumner, W. G., 286, 377, *et seq.*, 418, 531, *b.*
Sundbarg, G., 511
Surell, 225
Swan, C. H., 738
Swan, H. H., 579, 580
Symons, T. W., 197
Sympher, 251, 252, 253, 261

Taft, W. H., 26
Talkenburg, 470
Tarsney, T. E., 582
Taunton, 228, 229
Taussig, F. W., 498
Tayler, J. L., 285
Tchaykovsky, N. W., 739
Telford, T., 235
Temperly, 289
Tenney, A. A., 511, *b.*
Terlinden, Ch., 286, *b.*
Terrill, Bertha M., 723, *b.*
Thayer, J. S., 723, *b.*
Thayer, W., 126-38, *pap.*
Thomas, D. Y., 294-5, *r.*
Thompson, J. A., 285
Thompson, W. B., 579, *et seq.*
Thompson, W. G., 241
Tilden, B. T., 593
Toumey, J. W., 224
de Tourville, H., 511, 723, *b.*
Tower, W. S., 290, *r.*, 515, *r.*
Treat, C. H., 335-44, *pap.*, 397, 739
Trevelyan, G. A., 286, 532, *b.*
Tyler, J., 522, 719
Tyler, L. G., 724, *b.*

Ulrich, F., 261
Underwood, J. H., 511
Untermann, E., 511

Vaillant, C. D., 470
Vance, J. L., 139-45, *pap.*
Vancouver, G., 197
Vanderlip, F. A., 302-7, *pap.*, 739
Van Sant, S. R., 157
Vergennes, C. G., 532
Vernon, W., 594, 595
Vidal, 263
Vinogradoff, 276
Von Holst, H., 719
Voorhees, E. B., 724, *b.*

Walpole, R., 266, 267
Warburg, P. W., 369, 371
Warner, W., 48
Washington, B. T., 724, *b.*
Washington, G., 83, 356, 532, 533
Watkins, G. P., 511
Watson, F. D., 515-6, *r.*, 522-3, *r.*
Watson, W. P., 286
Watts, O. A., 391
Way, R. B., 146-63, *pap.*
Webb, J. H., 505
Webb, Mrs. S., 285
von Weber, E., 261
Webster, H., 724, *b.*
Weismann, 269
Wells, 228, 229
Wells, H. G., 285, 725
Welsford, J. W., 511, *b.*
Wende, E., 484, 488
Wendell, B., 286
Wenley, R. M., 285
de Wesselitsky, G., 285
West, M., 512
Wexler, S., 448-53, *pap.*
Wheeler, W. H., 244
White, A. D., 498
White, E., 725
Whitney, W. C., 561, 564
Widener, P. A. B., 561, 564
Widney, J. P., 287, *b.*
Wilcox, D. F., 576-92, *pap.*
Wilkes, C., 197
Willcox, W. R., 571
William I, 286
William of Orange, 527
Williams, E. L., 235
Williams, R., 723
Wilson, J., 498
Winstanley, G., 264
Winter, N. O., 512, *b.*
Wirminghaus, A., 262
Wolff, S., 630-38, *pap.*
Wolsey, P., 524
Wood, H. A. W., 725
Wood, W. A., 287, 512, *b.*
Woodruff, C. R., 738
Wright, H. C., 552-75, *pap.*
Wright, H. N., 287

Yates, H. W., 398-412, *pap.*
Yerkes, C. T., 576, 620, 690
Young, F. G., 189-202, *pap.*
Young, J. T., 739

Zinn, Major, 143
Zoepfl, G., 261

INDEX OF SUBJECTS

[Titles of articles are printed in small capitals.]

Agriculture. "Organization of Agriculture," by E. A. Pratt, note, 507
Amsterdam. Water Supply, 470
Argentine. "Ein Land der Zukunft," note, 271
Australia. "The Early Federation Movement in Australia," by C. D. Allin, note, 707

Babylon. "A Prophet in Babylon," by W. J. Dawson, note, 708
Baltimore. Infant Mortality, 487
Banking.
    Banking System, Readjustment of, and the Unification of the Currency. See Currency.
    Central Bank, Clearing-House Certificates and the Need for a, 361-66. Former panics, 361; New York the financial center, 364; central bank, 365
    Central Bank as a Menace to Liberty, A, 355-360. Individual freedom and the banks, 355; central bank a menace, 357; evils of centralization, 359.
    Central Bank, The Need of a, 345-351. Modification of present system necessary, 345; plan proposed, 346; lack of training, 347; faults of independent banks, 349; a central bank, 350.
    Central Bank, Relation of a, to the Elasticity of the Currency., 372-76. Trust companies, 372; expansion of currency, 374; clearing-house certificates, 375
    "Practical Problems in Banking and Currency," edited by W. H. Hull, note, 713
    Trust Companies and Reserves, 463-69. Clearing-house banks, 463; increased reserves needed, 464; interest of public, 466; time deposits, 467
Berlin. Water Supply, 476
Biography.
    "Grant, Lincoln and Freedmen," by J. Eaton, review, 520
    "Life and Times of Stephen Higginson," by T. W. Higginson, note, 504
    "Who's Who in America," note, 725
Bolivia. "Record of an Ill-Fated Expedition," by N. B. Craig, note, 500
Boston Consolidated Gas Company. See Public Service Corporations
Botany. "Alpine Flora of the Canadian Rocky Mountains," by S. Brown, note, 497
Buffalo. Infant Mortality, 488
"Burma: A Handbook of Practical Information," by J. G. Scott, note, 720

Canals. Canals, Atlantic Coastwise: Their History and Present Status, 92-101. Dimensions, 93; railroad and canal development compared, 94; historical sketch, 95; possibilities, 99
    Canals, The Anthracite-Tidewater, 102-116. Delaware and Hudson Canal, 92; Morris Canal, 105; Delaware Division Canal, 107; Lehigh Coal and Navigation Company, 108; Schuylkill Canal, 111; future, 113
    Canals, The New York, 117-125. Erie Canal since Civil War, 118; reasons for decline, 119; projects for improvement, 121; probable results, 123

  Cape Cod Canal, 81-91. Importance, 82; early development, 82; present project, 84; traffic that would seek canal, 87; future development, 89
  Panama Project, Present Status of, 12-35. Physical conditions on isthmus, 13; river flow, 15; Chagres River, 17; health conditions, 19; plan of waterway, 21; stream flow in canal region, 23; ship passage in canal, 24; present organization on isthmus, 26; work of construction, 29; excavation 1907, 33; expenditures 1907, 35
Catholic Church. "Guillaume ler Roi des Pays-Bas et L'Eglise Catholique-en Belgique" (1814-30), by Ch. Terlinden, note, 286
Chicago. Chicago New Charter Movement. See Municipal Ownership.
  Relation of Chicago to Public Service Corporations. See Public Service Corporations.
  Recent Phases of Chicago's Transportation Problem. See Street Railways
Children. The New York Society for the Prevention of Cruelty to Children, 492-4
"Chile of To-Day," by A. Ortuzar, review, 530
China.
  "Anglo-Chinese Commerce and Diplomacy," by A. J. Sargent, note, 720
  "Breaking Down Chinese Walls," by E. I. Osgood, note, 717
  "China and America To-Day," by A. H. Smith, note, 721
  "The Evolution of New China," by W. N. Brewster, note, 265
"Christian Science: the Faith and its Founder," by L. P. Powell, note, 719
"Christianity's Storm Center," by C. Stelzle, note, 510
Cincinnati. Infant Mortality, 489
Citizenship. "The Citizen's Part in Government," by E. Root, note, 507
Civics. "On the Civic Relations," by H. Holt, note, 276
Civilization. "Medieval Civilization," edited by D. C. Munro and G. C. Sellery, note, 506
  "The Development of Western Civilization," by J. D. Forrest, note, 271
Colonies.
  "British Colonial Policy," by G. L. Beer, review, 514
  "Imperial Outposts," by A. M. Murray, review, 529
  "Oversea Britain," by E. F. Knight, note, 505
Commerce.
  "History of Commerce," by C. Day, review, 517
  "International and Commercial Policies," by G. M. Fisk, review, 522
  "Regulation of Commerce under the Federal Constitution," by T. H. Calvert, note, 499
  "The World's Commercial Products," by W. G. Freeman and S. E. Chandler, note, 709
"Congo and the Coasts of Africa," by R. H. Davis, note, 500
Constitution. "The American Constitution," by F. J. Stimson, note, 722
Copenhagen. Water Supply, 479
"Corea the Hermit Nation," by W. E. Griffis, note, 273
Corporations. "Modern Business Corporations," by W. A. Wood, note, 512
Cuba. "A History of Slavery in Cuba," by H. H. S. Aimes, note, 495
Currency. Currency, The Readjustment of Our Banking System and the Unification of the, 335-344. The origin of the panic, 335; plan for reform of our currency proposed, 336; how to avoid inflation, 342
  Currency and Banking, Neglected Aspects of, 420-47. Credit climax of 1902, 421; panic of 1907, 423; dangers in present readjustment, 426; legislation to prevent panics, 429; elasticity, 431; function of a bank, 435; neglected aspects of banking, 439
  Currency Problems, Diagnosis of the World's Elastic, 377-97. Panics not preventable, 378; elasticity, 378; foreign experience, 379; American experience, 385; signals of panics, 388; American Bankers' Association plan weak, 389; Aldrich bill, 392; national reserve bank, 395
  Currency Reform, Foreign Experience a Guide to, 367-71. Schemes of reform, 368; European systems, 369; Congress and reforms, 371
  Currency Reform, the Obstacle to, 454-59. Causes of crisis, 454; obstacles to reform, 456; Aldrich and Fowler bills, 459
Democracy.
  "Social Democracy and Population," by A. A. Tenney, note, 511
  "True and False Democracy," by N. M. Butler, note, 499
Detroit. The Control of Public Service Corporations in. See Public Service Corporations
Diplomacy. "American Diplomacy under Tyler and Polk," by J. S. Reeves, note, 719
  "The Monroe Mission to France, 1794-96," by B. Bond, Jr., note, 264
District of Columbia, Finances of, 671-88. Historical review, 671; taxation system, 672; assessment method, 675; special assessment, 679; budget and budgetary procedure, 681; improvements needed, 687; extraordinary expenditures and debt, 685
Economics. "American Business Enterprise," by D. Knoop, note, 719
  "The Conquest of Bread," by Prince Kropotkin, note, 715
  "Economic History of the United States," by E. L. Bogart, note, 497
  "Enterprise and the Productive Process," by F. B. Hawley, review, 729

  - "Essentials of Economics," by J. B. Clark; review, 515
  - "The Limit of Wealth," by A. L. Hutchinson, note, 278
  - "The Rate of Interest," by I. Fisher. note, 501
  - "Selected Readings in Economics," by C. J. Bullock, note, 498
  - "The Strength of Nations," by J. W. Welsford, note, 511
  - "Three Acres and Liberty," by B. Hall, note, 274
  - "Wage-Earners' Budgets," by L. B. More, review, 528
- Egypt. "Bonaparte in Egypt and the Egyptians of To-Day," by H. A. Browne, note, 498
  - "Modern Egypt," by the Earl of Cromer, review, 725
- "England and the English," by F. M. Hueffner, note, 277
- Ethnology. Twenty-fourth and Twenty-fifth Annual Reports of the Bureau of American Ethnology, note, 268
- Exploration. "The Great Plains," by R. Parrish, note, 718
  - "Nearest the Pole," by R. E. Peary, note, 506

- Farming. "Forage Crops," by E. B. Voorhees, note, 724
- Finance. "Finances and Financial Policy of Massachusetts from 1780 to 1905," by C. J. Bullock, note, 267
  - FINANCES OF THE DISTRICT OF COLUMBIA. See District of Columbia
- Fraternities. "The Cyclopedia of Fraternities," by A. C. Stevens (Ed.), note, 722

- Geography. "The Dawn of Modern Geography," by C. R. Beazley, note, 496
  - "Home Life in All Lands," by C. Morris, note, 506
  - Political. "River Discharge," by J. C. Hoyt and N. C. Grover, note, 713
- Germany. German Inland Waterways. See Waterways.
- Government. "Proportional Representation," by J. R. Commons, note, 270
- Great Britain Inland Waterways. See Waterways.
- GREAT LAKES. TRANSPORTATION ON, 126-138. Great Lakes commerce, 126; iron and ore traffic, 128; grain traffic, 131; lumber, coal and passengers, 133; rates, 135; lake lines ownership, 136

- History (American). "The American Colonies in the Seventeenth Century," by H. L. Osgood, review, 294
  - "The American Revolution," by G. O. Trevelyan, review, 532
  - "English Colonies in America," by J. A. Doyle, review, 291
  - "Life and Public Services of William Pitt Fessenden," by F. Fessenden, review, 521
  - "Maryland During the English Civil Wars," by B. C. Steiner, note, 285
  - "Narratives of Early Virginia, 1606-1625," by G. L. Tyler, note, 721
  - "The Union Cause in Kentucky," by T. Speed, review, 298
  - (European). "Atlas of European History," by E. W. Dow, note, 270
  - "Cambridge Modern History," Vol. X. "The Restoration," review, 288
    - "A History of the Reformation," by T. M. Lindsay, review, 526
    - "The Manor and the Manorial Records," by N. J. Hone, note, 276
  - "The Political History of England," edited by W. Hunt and R. L. Poole, Vol. V, by H. A. L. Fisher, review, 523
- "Home Economics," by M. Parloa, note, 282
  - "Household Management," by B. M. Terrill, note, 723

- Immigration. "The Asiatic Danger in the Colonies," by L. E. Neame, note, 282
- Indian. "The American Indian as a Product of Environment," by A. J. Fynn, note, 710
  - "The Indians' Book," edited by N. Curtis, review, 727
- Infant Mortality in American Cities, 484-94
- "Iron and Steel Production in America," by F. Popplewell, note, 719
- Irrigation. FORESTS, RELATION OF, TO STREAM CONTROL, 219-227. Storage reservoirs, 219; water-flow and forests, 221; foreign experience, 225
  - RECLAMATION OF ARID WEST BY FEDERAL GOVERNMENT, 203-218. Reclamation act, 203; projects reviewed, 204; estimated acreage or cost of projects, 218
- Italy. "History of the Langobards," by Paul the Deacon, note, 272

- Japan. "The Japanese Nation in Evolution," by W. E. Griffis, note, 273
  - "The Life of Japan," by M. Miyakawa, note, 281
  - "Old and New Japan," by C. Holland, note, 713
- "Jurisprudence," by J. W. Salamond, note, 508

- Labor. "The Industrial Conflict," by S. G. Smith, review, 297
  - "Patrons et Ouvriers," by A. Roquenant, note, 508
  - "Factory Legislation in Pennsylvania," by J. L. Barnard, note, 263
  - "The Labor Legislation of Connecticut," by A. M. Edwards, review, 521
  - "Législation du Travail," note, 281
- Law. "Cases on Constitutional Law," by C. E. Boyd, note, 265
  - "Legal Essays," by J. S. Thayer, note, 723
  - "The Principles of German Civil Law," by E. J. Schuster, review, 295
- London. "The Governance of London," by G. L. Gomme, note, 711
- Lumber. "History of the Lumber Industry of America," edited by J. E. Defebaugh, review, 727

- Madrid. Water Supply, 482

- Mexico. "La Intervencion Francesa en Mexico," by M. Bazaine, note, 496
  - "Mexico and Her People of To-Day," by N. O. Winter, note, 512
- Milwaukee. Infant Mortality, 489
- Minneapolis. Infant Mortality, 490
- Missions. "The Missionary and his Critics," by J. L. Barton, note, 495
- Money. "Money and Credit Instruments in their Relation to Prices," by E. W. Kemmerer, note, 714
  - "Money and Investments," by M. Rollins, note, 507
- Municipal Government. "The British City: The Beginnings of Democracy," by F. C. Howe, review, 729
  - German Städtetag, The, 703-6. What the Städtetag is, 703; its meetings, 704; its library, 705
  - Notes on, 470-483
- Municipal Ownership. Chicago New Charter Movement—Its Relation to Municipal Ownership, 639-48. Conditions to be remedied, 639; difficulties of obtaining new charter, 641; changes proposed, 643; debt and taxes, 644; traction situation and charter, 646; saloon regulations, 648
  - "Municipal and Private Operation of Public Utilities," review, 731

- Navy. "From Sail to Steam," by A. T. Mahan, note, 716
- Negro. "The Health and Physique of the Negro American," note, 707
  - "The Negro: A Menace to American Civilizaton," by R. W. Shufeldt, note, 509
  - "The Negro in Business," by B. T. Washington, note, 724
  - "The Negro Races," by J. Dowd, review, 518
- New Orleans, Public Service Corporations of. See Public Service Coporations.
- New York City. Infant Mortality, 485. Franchise Grants in. See Public Service Corporations. Public Utilities Regulation in. See Public Service Corporations. Development of Transit Control in. See Street Railways.

- Ohio River. "The Ohio River: A Course of Empire," by A. B. Hulbert, note, 504
- Oklahoma. "Constitution and Enabling Act of the State of Oklahoma," by C. O. and W. C. Bunn, note, 708
- Oregon. "Dr. John McLoughlin, the Father of Oregon," by F. V. Holman, note, 275

- Panic. **Elastic Credit Currency as a** Preventive of Panics, An, 326-334 Panics unnecessary, 326; causes of panic, 328; elastic currency, 331; credit and expansion, 332.
  - Northwest in the Recent Financial Crisis, The, 413-19. Pacific northwest and panic, 413; fictitious reserves, 415; financial system weak, 417
  - Panic of 1907 and Some of Its Lessons, The, 308-325. Characteristics of panics, 308; panic of 1907, 310; a short panic, 312; business situation, 314; faults of currency, 316; American Bankers' Association plan, 319; bank notes and deposits—asset currency, 320
  - Panic of 1907, The Lessons of, 448-53. Causes of panic, 448; who are to blame, 449; lack of patriotism, 451
  - Panic Prevention and Cures, 398-412. Causes of panic, 399; panic of 1907, 401; asset currency, 403; inelastic bank reserves, 408; reforms, 410.
  - Panic, The, as a World Phenomenon, 302-307. Causes of panic, 302; trust company situation, 304; lack of financial knowledge, 305
  - Panics, A National Clearing-House as a Safeguard Against, 460-62. Clearing-house corporations, 460; national clearing-house, 461
- Penology. "Outdoor Labor for Convicts," by C. R. Henderson, note, 713
- Peru. "The Andes and the Amazon," by C. R. Enock, review, 728
- Philadelphia. Infant Mortality, 486. Philadelphia's Relation to Rapid Transit Company. See Street Railways.
- "Philippines," by C. H. Forbes-Lindsay, note, 271
- Philosophy. "The World Machine," by C. Snyder, note, 284
- Political Economy. "A History of Political Economy," by J. K. Ingram, review, 730
- Political Science. "America as a World Power," by J. H. Latané, review, 525
  - "The Economic Policy of Robert Walpole," by N. A. Brisco, note, 266
  - "Political Problems of American Development," by A. Shaw, review, 531
- Politics. "DeWitt Clinton and the Origin of the Spoils System in New York," review, 293
  - "The Political Thought of Plato and Aristotle," by E. Barker, review, 287
  - "The Rise and Development of the Gerrymander," by E. C. Griffith, note, 502
- Providence. Infant Mortality, 490
- "Public Ownership and the Telephone in Great Britain," by H. R. Meyer, review, 527
- Public Service Corporations, Regulation of.
  - Boston Consolidated Gas Company, its Relation to the Public, its Employees and Investors, 593-99. Historical review, 593; price of gas, 595; profit-sharing and sliding scale, 597; satisfactory present condition, 598
  - Chicago, The Relation of, to Public Service Corporations, 689-94. Home rule for control of public utilities, 689; street railway franchises, 691; gas companies, 692; electric light, 693
  - Franchise Grants in New York City, 612-18. Recent franchise grants, 613; subway construction,

615; public safeguards, 616; recent tendencies, 617
    New Jersey, Restrictive Legislation Against Public Service Corporations in, 659-70. Encouragement of corporations, 659; benefits of corporations, 660; ill-advised legislation, 662; proper sphere of legislation, 664; consequences of ill-advised legislation, 665; failure of New York legislation, 666
    New Orleans, Public Service Corporations of, 630-38. Electric light, power and gas, 630; other public services, 631; municipal ownership of water, sewerage and drainage plants, 634
    Public Service Commissions of the State of New York, The, 649-58. Failure of competition, 649; Public Service Commissions law, 651; general scope of commissions' work, 653; commission of second district and its work, 654; possibilities of success, 656
    Public Service Corporations in Detroit, The Control of, 576-92. Detroit franchise grants, 576; Hally ordinance, 577; Pingree's municipal ownership plan, 580; plans for constitutional changes, 581; Codd-Hutchins franchise, 583; constitutional convention, 585; telephone and electric light situation, 583; gas supply, 589
    Public Service Corporations, Moderation in Control of, 701-2. Financial condition, 701; unjust legislation, 702
    Public Utilities Regulation in New York, 535-551. Tendency towards regulation, 535; New York Public Service Commission's law, 536; working of law, 540; gas commission, 542; Public Service Commission for New York City, 543; regulating stock and bond issues, 545; regulation through accounts, 548; annual audit proposed, 550.

Railroad. "American Railways as Investments," by C. Snyder, note, 510
    "Federal Regulation of Railway Rates," by A. N. Merritt, note, 716
    "Proceedings of the Eighteenth Annual Convention of the National Association of Railway Commissioners," note, 717
    "Railroad Accidents: Their Cause and Prevention," by R. C. Richards, note, 283
Reform Schools. "Administration and Educational Work of American Juvenile Reform Schools," by D. S. Snedden, note, 509
River Improvement. Columbia River Improvement and the Pacific Northwest, 189-202. Market problem, 189; river as competitor to railroads, 191; commerce of Columbia, 192; railways the chief reliance, 195; improvements made, 197
    Delaware River, The, 67-72. Importance of Delaware in commerce, 67; former improvements, 68; defect in channel, 71
    Mississippi Improvements and Traffic Prospects, 146-163. River regulation, 146; lower Mississippi problem, 149; middle section, 150; upper section, 153; water power, 156; traffic and rates on upper river, 157; on lower river, 159
    Missouri River, The Improvement of, and its Usefulness as a Traffic Route, 178-188. Missouri River commerce—historical review, 179; improvements needed, 183; cost, 186; plans, 187
    Ohio River, The Improvements of, 139-45. Ohio River commerce, 139; improvements, 140; river a supplement to railroad, 142; Ohio Valley Improvement Association, 144
Rochester. Infant Mortality, 491
Russia. "The Red Reign," by K. Durland, review, 519
    "Red Russia," by J. F. Fraser, note, 709

St. Louis. Infant Mortality, 487
Secret Societies. "Primitive Secret Societies," by H. Webster, note, 724
Single Tax. "The Digger Movement in the Days of the Commonwealth," by L. H. Berens, note, 264
Slavery. "A History of Slavery in Cuba," by H. H. S. Aimes, note, 495
Socialism. "An Inquiry into Socialism," by T. Kirkup, note, 279
    "Capitalist and Laborer," by J. Spargo, note, 280
    "The Conflict of the Ages," by C. I. Poorman, note, 283
    "Revolution and Counter Revolution," by K. Marx, note, 280
    "The Right to be Lazy," by P. Lafargue, note, 280
    "Socialism and Philosophy," by A. Labriola, note, 279
    "Socialism before the French Revolution," by W. B. Guthrie, note, 711
    "Socialism, Positive and Negative," by R. La Monte, note, 280
Sociology. "Adam Smith and Modern Sociology," by A. W. Small, review, 296
    "The Better City," by D. W. Bartlett, note, 495
    "Christianity and the Social Order," by R. J. Campbell, note, 499
    "The Elimination of the Tramp," by E. Kelly, note, 714
    "Folkways," by W. G. Sumner, review, 531
    "The Growth of Modern Nations," by H. DeTourville, note, 723
    "Heredity and Selection in Sociology," by G. Chatterton-Hill, note, 269
    "The Human Harvest," by D. S. Jordan, note, 278
    "The Mediator" by E. A. Steiner, note, 510
    "Outlines of Criminal Law," by C. H. Kenny, note, 505

Index of Subjects

- "Race Life of the Aryan Peoples," by J. P. Widney, note, 287
- "Races and Immigrants in America," by J. R. Commons, review, 516
- "Sex Equality," by E. Densmore, note, 501
- "The Sexual Instinct," by J. T. Scott, note, 508
- "Sin and Society," by E. A. Ross, review, 295
- "Social and Ethical Interpretation in Mental Development," by J. M. Baldwin, review, 513
- "Sociological Papers," note, 285
- "Standards of Public Morality," by A. Hadley, review, 523
- "Statistique et Science Sociale," by C. Jacquart, note, 505
- "Systèmes Socialistes d'Exchange, Les, by M. Aucuy, note, 263
- "Woman and the Race," by G. Hart, note, 274

South America. "The South Americans," by A. Hale, note, 503

Spain. "Cordova," by A. F. Calvert and W. M. Gallichan, note, 268
- "The Heart of Spain," by S. Dick, note, 501

Steel. "The Romance of Steel," by H. V. Casson, review, 290
- "United States Steel Corporation," by A. Berglund, review, 515

Stockholm. Water Supply, 480

Street Railways. Chicago's Transportation Problem, Recent Phases of, 619-29. Historical review, 619; Mayor Dunne's program, 620; Müller's law, 622; legal complications, 623; election and change of program, 625; receivership of street railways, 626; present status, 628
- Electric Railways, Result of Further Legislative Regulation of, 695-700. Inducements to extension of electric railways, 695; present financial status, 696; difficulties of legislative interference, 698; need for moderaton, 699
- Philadelphia's Relation to Rapid Transit Company, 600-11. Street railway system, 600; need of improvement, 602; terms of contract of 1907, 603; criticism of contract, 606; effect on city, 609
- Transit Control in New York City, Development of, 552-75; Historical review of transit control, 552; finances, 563; expenditures, 565; equipment and operation, 566; improvement over former commissions, 569

Subsidies. "Ship Subsidies," by W. T. Dunmore, note, 708

Telegraph. "The British State Telegraphs," by H. R. Meyer, review, 731

Transportation. Transportation on the Great Lakes. See Great Lakes.

Trusts. "The Trust Movement in British Industry," by H. W. Macrosty, note, 281

"Uganda by Pen and Camera," by C. W. Hattersley, note, 712

Upsala, Water Supply, 481

Water-Power in the Mississippi Valley, 164-177. Plans for improvement, 164; upper Mississippi powers, 167; Missouri Valley powers, 170; Ohio River powers, 172; Tennessee powers, 174

Water Supply. "Clean Water and How to Get It," by A. Hazen, note, 275
- Relation of the Municipalty to the Water Supply, 470-83

Waterways (American)
- Chesapeake and Delaware, and Norfolk-Beaufort Waterways, Engineering Features of, 73-80. Coastwise canals of Carolinas, 73; engineering features, 75; land and water cuts, 76; locks, 78
- Waterways, American, The Use and Development of, 48-66. Waterways commission and its work, 48; plan for improvements, 50; scope of work, 53; can waterways be restored, 54; construction, 58; national incorporation of carriers, 60; extent of national powers, 61; plan of national department, 64
- Waterways, American, Legislative Program Congress Should Adopt for Improvement of, 36-47. Waterway associations, 36; river and railroad carriage compared, 39; waterway improvements, 40; legislative program, 42; department of transportation proposed, 46
- Waterways Policy, Our National Inland, 1-11. Waterways and resources of Mississippi Valley, 2; expenditures for improving Mississippi, 4; irrigation projects, 6; forests, 7; preservaton of natural resources, 8

(Foreign)
- Waterways, Inland, of Great Britain and the Plans Under Consideration for their Improvement, 228-245. British inland waterways, 228; state ownership and control, 231; Scottish and Irish waterways, 233; finance of waterways, 236; railway control, 237; revived interest, 239; canal trust bill, 242
- Waterways, The Present Significance of German Inland, 246-262. Inland waterways before advent of railroads, 247; growth of water transportation, 248; present rail and water traffic, 251; tolls, 254; recent improvements, 257

BINDING SECT. JUN 21 1967

H American Academy of Political
1 and Social Science, Philadelphia
A4 Annals
v.31

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY